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EXCURSIONS  
TO  
ARRAN, AILSA CRAIG,  
AND  
THE TWO CUMBRAES,  
WITH REFERENCE TO THE  
NATURAL HISTORY OF THESE ISLANDS.

TO WHICH ARE ADDED,  
DIRECTIONS FOR LAYING OUT SEAWEEDS, AND PREPARING THEM  
FOR THE HERBARIUM.

BY  
REV. DAVID LANDBOROUGH, D.D.,  
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EDINBURGH:  
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M.DCCC.LI.

EDINBURGH:  
PRINTED BY JOHNSTONE AND HUNTER,  
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TO  
THE LADY EMMA CAMPBELL,  
OF ARGYLE,  
THESE LITTLE EXCURSIONS ARE,  
WITH THE GREATEST RESPECT AND ESTEEM,  
DEDICATED,  
BY HER HUMBLE SERVANT,  
THE AUTHOR.



## ADVERTISEMENT.

THE reader is respectfully, but very earnestly, requested not to begin at the beginning, as would seem most natural, nor to begin at the end, as if the book were written in Hebrew; but to commence at Part I., page 95. If he have enough of patience to persevere, let him read on to page 367. Then, let him read Part II., at the beginning of the volume; and after that, Parts III. and IV., at the end of the volume.

This, it must be owned, is an awkward procedure; but if another edition should be called for, all shall be put to rights. The cause of the irregularity is this:—When originally published, about a hundred pages at the beginning of the volume contained “Arran, a Poem.” The publisher found that the union of poetry and prose was disadvantageous to both; and having disjoined them, he asked the Author to furnish prose equal in amount to the dis-

sociated poetry. The quantity furnished proving more than sufficient to fill up the blank space at the beginning, it was appended to the end of the volume, forming Parts III. and IV. The reader will do justice neither to himself nor to the little work, if he do not attend to the suggestions respectfully made.

SALTCOATS, *11th August* 1851.



## ORIGINAL PREFACE.

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WHEN the publisher of the *Christian Treasury* asked me to furnish some articles on Natural Science for that periodical, I requested my good friend, Dr George Johnston, author of the history of British Zoophytes and other valuable works, to suggest some subjects. He advised me to write a Natural History of the parish of Stevenston, in which I have so long resided. My excellent friend, Professor John Fleming, of the New College, Edinburgh, had previously suggested the same thing, advising me to take as models White's History of Selborne and Ure's History of Rutherglen and East Kilbride. Encouraged by this, I wrote some introductory papers in the *Christian Treasury*: but as I had about that time spent a few days in the island of Arran, I quitted the Ayrshire field for a little, to give some account of this excursion, which I thought I could do in a few pages. The work, however, grew in my hands, and when I had written several papers, I was encouraged to proceed by the spontaneous offer of the publisher to give me more liberal remuneration than I had at the outset asked.

The little work was written during what, with the exception of the two previous years, was the very busiest period of my professional life. It was consequently written

in unfavourable circumstances ; but I did my best, and chapter after chapter was added, till I had circumambulated this interesting island.

For whatever progress I have made in Natural Science, I am indebted to distinguished friends, with whom I either have had the pleasure and the honour of being personally acquainted, or with whom I have had so much epistolary correspondence, that I think myself nearly as intimately acquainted with them as if I had been in the habit of meeting with them for years. Of Phenogamous Botany I had always been fond since I was a young student at the University of Edinburgh. Of every other branch of Natural Science I would probably have remained ignorant, had it not been for the kindness of my distinguished and much-valued friend, Professor John Fleming, to whom I am indebted for any knowledge I have of Fossil Botany, and still more of Conchology, recent and fossil, with the exception of minute microscopic shells, for the knowledge of which I have to thank my kind and obliging friend, William Bean, Esq. of Scarborough. My instructions in Zoophytology have been chiefly received from my talented, kind-hearted, and highly-esteemed friend, Dr George Johnston, well known to the world by his printed works, and still better known to me by his truly interesting correspondence. For my knowledge of Marine Botany, I am under many obligations to Sir William J. Hooker, London; to Dr K. Greville, Edinburgh ; to Mr Ralfs, Penzance ; to Dr Dickie, King's College, Aberdeen ; to Mrs Griffiths, Torquay, the queen of Algologists, and so well entitled to my most grateful thanks for her ladylike kindness ; and latterly to Dr W. H. Harvey, Trinity College, Dublin, so well known, among other valuable works, by his magnificent work on British Algæ, at present in course of publication. In the Geological department, I have been much

indebted to James Smith, Esq. of Jordanhill, especially in what relates to the newer pliocene and the post-tertiary deposits, in which field he is the highest authority. To George Gardner, a distinguished naturalist, now in Ceylon, I am indebted for my knowledge of Mosses. To William Thompson, Esq. of Belfast, I am greatly indebted for much information, most obligingly given, respecting Birds, and Fishes, and Crustaceans, and many of the strange inhabitants of the mighty deep. I am happy that I have lately made the acquaintance of Joshua Alder, Esq. of Newcastle, a very distinguished naturalist, and much esteemed by all to whom he is known. Besides much general information given on various subjects, he has kindly initiated me in the study of Nudibranchs, those interesting marine creatures of which he and Mr Hancock are furnishing for the Ray Society a splendid monograph. And, lastly, I owe many thanks to James Paterson, Esq., Whitehouse, Arran, for the tasteful views which adorn my little volume, viz., Views of Brodick, Glen Rosa, and Brodick Castle.

After such an array of distinguished names, I might well feel ashamed that I know so little in the various branches of Natural Science, were it not that, even though I had been a more apt scholar, one essential requisite for much progress was greatly lacking, viz., *time*, only scraps and corners of which I could with any propriety dedicate to these pursuits. The fragments of time thus employed, I flatter myself, have not been lost.

The importance of Natural Science is much more generally acknowledged than it was some years ago. There are not a few now, especially of our young divines, who would agree in sentiment with pious Baxter, when he says:—

“Nature must be read as one of God’s books, which is purposely written for the revelation of himself. Think not so basely of your Physics (Natural Science), and of

the works of God, as that they are only preparatory studies for boys. It is a most high and noble part of holiness, to search after, behold, admire, and love the Creator in all his works. How much have the saints of God been employed in this exalted exercise, the Book of Job and the Psalms may show us that our Physics are not so little related to Theology as some suppose.”

My aim has been to trace the goodness and wisdom of God in the works of creation, and his mercy and love through Jesus Christ in the wonders of grace, and to stir up myself and others to love Him more and to serve Him better; and if I be, even in the slightest degree, successful, I shall not have written in vain.

ROCKVALE, SALTCOATS,

*April, 1847.*

## PREFACE TO SECOND SERIES.

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It was intended that this Second Series should have appeared earlier in the season, but unforeseen causes prevented this being done.

In the present Series, the Author has endeavoured to describe whatever has recently occurred to him among these islands as deserving of notice. He doubts not that much remains to be discovered in these interesting localities. They present, in particular, a good marine field for the dredger. The Author has had no leisure this season for such recreation till the beginning of the present month, when he spent two days in dredging, with Dr. Greville and Mr J. Cunningham, Queen Street, Edinburgh, gentlemen with whom it is both pleasant and profitable to associate. He has no intention to describe the excursion. He may merely mention that *Ectocarpus Landsburgii* was

## PREFACE.

got in abundance at Largs, and *Cutleria multifida*, *Peyssonelia Dubyi*, *Padinella Parvula*, and *Riccularia nitida*, off the north end of Big Cumbrae. The marine scenery reminded the Author of charming views he had lately enjoyed in the south of England—Largs corresponding to Exmouth, and Fairlie to Budleigh Salterton. The seaward views, however, surpassed anything that even the south of England can furnish, for Cumbrae, and Bute, and Arran, and occasionally Ailsa lay before them, and on these two lovely days they had the balmy climate of Devonshire, which, *entre nous*, we have not always in the west of Scotland.

SALTCOATS, 11th August 1851.

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# EXCURSIONS TO ARRAN.

## PART II.

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“ Go abroad

Upon the paths of Nature, and when all  
Its voices whisper, and its silent things  
Are breathing the deep beauty of the world,  
Kneel at its simple altar, and the God  
Who hath ‘ the living waters ’ shall be there.”

SINCE 1847, when this little book was first published, I have often made brief visits to Arran, at times only for part of a day ; in which case, I fixed on one when the daily steamer from Ardrossan, not only, as usual, went to Arran, but, having landed those who wished to be put ashore, proceeded on a pleasure sail to Ailsa, or Lochryan, or Rothesay. On these occasions, five or six hours could be spent in Arran, and home could be reached in the evening by the returning boat. On more than one occasion, however, the visit extended to two days. On the first of these extended visits, I had the pleasure of being in company with Dr Greville, and Dr Balfour, Professor of Botany in the University of Edinburgh,

and several other friends from Edinburgh and Glasgow. One division of the party took, at the outset, to the heights, and the other division kept by the sea ; but all met in the afternoon near Corrie, and proceeded along the shore to Brodick, where they remained for the night. Next day, they proceeded along the shore from Brodick to Lamlash, and in the evening returned by the steamer to Ardrossan.

On the first day, there was much that was interesting observed, but nothing that was very rare, except *Petalonema alatum*, found by Dr Balfour, on moist rocks at a considerable height. It has been found, I believe, only in Scotland, by Captain Carmichael, at Appin ; at Oban, by Mr M. J. Berkeley ; by Dr Dickie, at Aberdeen ; and now in Arran, by Professor Balfour. It is a highly curious plant, of a brownish colour, with a colourless sheath ; and the contrast betwixt the coloured and uncoloured parts, and the delicate *stricæ* on the sheath, render it a very beautiful object.

This excursion was a very joyous one, for several of the party were young—fresh from the Professor's botanical class ; and as they had never been in Arran before, every thing, in a manner, was new to them. Though in the excursions they had made around Edinburgh, they had become well acquainted with the Flora of the Lothians, they met with several plants in the west that are never seen in the east, such as *Pinguicula Lusitanica*, so abundant, even at the roadside, betwixt Corrie and Brodick, and *Cotyledon umbilicus* adorning the rocks and old

dykes as you approach Lamlash. We, on the other hand, had the unexpected pleasure of falling in with two living specimens of great worth from Edinburgh. Sauntering leisurely along the road, near Brodick, I was overtaken by two gentlemen in a car, the one, the Rev. Dr M'Crie, the worthy son of a worthy father, and who, by their works, have laid, not merely Scotland, but the world, under great obligations. Along with him, on a little pleasure excursion, was his friend Mr Whytock from Edinburgh, a gentleman of great worth and benevolence, to whose kindness I was lately indebted for much of the happiness I experienced in a trip to the Giant's Causeway, and other interesting places in the North of Ireland. As they, however, were not botanizing, they moved on, and I joined our party in time to admire on the rocks, near Brodick, *Hymenophyllum Wilsoni*, *Osmunda regalis*, and other interesting ferns.

It was well for me, on reaching Brodick, that I had in the morning been invited to take up my quarters with my worthy friend Mrs Ramsay from Glasgow, for much of the inn had been preoccupied by another party, so that our party could with difficulty get accommodated. I visited them in the evening, and I was much amused with the strange business-like appearance that was presented. When I entered the parlour in which they were assembled, I found them seated round a large table, each having beside him his well-filled *vasculum*, with lots of drying paper and boards in which the specimens

were to be strapped, and thus put under pressure, after they had been properly laid out. I remember that Dr Greville had just been spreading out numerous specimens of *Conferva alpina*, which he had got in a little rivulet on the shoulder of Goatfell.

Next day, which was a very charming one, we sallied out after an early breakfast. Dr Greville took me down to a tract of wetish ground, near to the little quay, occasionally overflowed by the tide, and there he showed me great abundance of that dwarf variety of *Fucus vesiculosus*, to which the name of *Fucus Balticus* had been given. It was only two or three inches in height, growing among moss, without any roots attaching it to the moist soil. I remembered seeing it in the same place several years before, when I was searching for mosses, and being puzzled what to make of it.

In passing Strabane, I *keeked* into the well, in which, some time before, fine specimens of *Batrachospermum moniliforme* had been found by Miss Ramsay and my daughter Mrs Stark, but none of it could be seen on this occasion. Having understood that some rare mosses had been gathered in a little fir plantation near this place, Dr Greville and I entered in search of them, and we had the pleasure of finding, on the bark of the fir trees, numerous specimens of *Jungermannia minutissima*, and of the rarer *Jungermannia calyptrifolia*. I was much pleased with finding, in great beauty, in this plantation *Hymenophyllum Tunbridgense*, which I had not before met with in Arran. I think it is rarer in the

island than *Hymenophyllum Wilsoni*. At one time, I found some difficulty in distinguishing the one from the other ; but, by more minute inspection, that difficulty has vanished. The difference in the fruit at once determines the matter ; the capsular fruit of *H. Wilsoni* having the upper margin entire, whereas, in *H. Tunbridgense*, the summit of the capsules is spinuloso serrate. There are other distinctions by which the one may be known from the other, independent of the fruit. We think the *H. Tunbridgense* is the handsomer of the two. The other grows on moist rocks, or on much-shaded boulders. On this occasion, we found *H. Tunbridgense* growing profusely on the underside of a shelving rock, which formed the sloping roof of a little cave, where, indeed, it was shaded from the sun, but shaded also from rain and dew.

Opposite to this plantation, on the side of the road to Lamlash, there is a *standing-stone*, as pillars of this kind are called, which, no doubt, had been erected as a stone of remembrance, but which has long been mute, and can tell no tale of those who raised it, or of those on whose account it was raised. It may have been erected to mark the spot where the mighty had fallen, or to commemorate deeds of prowess, which they might think could never be forgotten ; but Time spread his dark wing over their green laurels, and they faded and died ; and little cause is there of wonder, that *their* mighty feats have sunk into oblivion, when even those who sought to build the tower of Babel up to heaven, that they

might make to themselves a *name*, have left behind them not even the shadow of a name which they impiously sought after. We all do fade as a leaf, and the place that now knows us shall soon know us no more for ever.

We now began to wind our way along the shore from Springbank to Lamblash. On the moist flat ground betwixt the sea and the large range of cliffs, there were some good phenogamus plants gathered, such as *Radiola millegrana*, *Ænanthe Lachenalii*, and a white variety of *Erythræa Centaurium*. In the little creeks along the shore, we found drifted heaps of *Leathesia tuberiformis*, in shape and colour not unlike hops, but rather irregular in size ; several specimens of *Enteromorpha* were dotted with *Myrionema strangulans* ; and the rocks were in some places covered with rather an unsightly scurf of *Ralfsia deusta*. But we were not a little gratified on coming to a large rock-pool almost filled with fine specimens of *Asperococcus Turneri*. Dr Greville was the first to observe this interesting and rather rare alga, and soon scores of specimens were speedily transferred to our insatiable vasculums. A specimen of a rarer and more beautiful plant was picked up, *Gloiosiphonia capillaris* ; but, though diligent search was made, we had to rest contented with this single small specimen.

It is wonderful how rapidly the hours pass by when we are agreeably employed in good company, amidst delightful scenery, getting, or even hoping to get, what is new or rare. Our watches, when we ven-



tured to interrogate them, told us that the hour of the steamer's starting was near at hand. We had then to quicken our pace, and, on reaching Lam-lash, we made speedy work with dinner, and got aboard the steamer, by which we reached Ardrossan at six o'clock, greatly delighted with our excursion.

Though not quite in chronological order, I may here give some account of a short, but very pleasant, excursion with Dr Greville, with whom it is always both pleasant and profitable to associate. He, and Mr James Cunningham of Edinburgh, a gentleman of kindred spirit with himself, having come to me the evening before, we started next morning by steamer for Arran, and had a pleasant passage across, though we had some fear that the day would prove too windy for dredging. Having reached Lam-lash, and engaged a boat, the boatmen made the little puff of wind an excuse for a third rower, which was more than was necessary, as the day proved quite calm. Neither of the gentlemen had before dredged in Arran, and Dr Greville, who, on that occasion, was chiefly on the outlook for *Crustacea*, was gratified by falling in with some that are not got on the east coast; and when many specimens of *Lima hians* were brought up in their millepore nests, Mr Cunningham was so delighted as to declare that it was well worth while to come all the way from Edinburgh to see these beautiful *Limas*. Other shells of great beauty were got, and some fine zoophytes, as well as seaweeds of considerable rarity. *Stilophora Lyngbyei*, of which before I had got only

some poor scraps, was dredged in such abundance, that much of it was cast back into the sea. Had I known that it was much valued by algologists in the south of England, where it is not found, more of it would have gone into my vasculum. I may here mention, though not in the order of time, that my son, when along with Dr Greville, on another occasion, got, in Lamlash Bay, a small specimen of *Mesogloia coccinea*, which had not before been found in Scotland. A larger and better specimen was about the same time gathered by my daughter, Mrs R. M. Stark, on the shore at Belhaven, near Dunbar, on the east coast.\*

Circumstances occurred which rendered it expedient that I should that evening return home, so that with considerable reluctance I left my excellent friends at their pleasant employment in the bay, and going aboard the steamer, was soon safely landed in Ayrshire.

Very seldom can I spare more than a day, or at farthest two, for such excursions; but on the occasion to which I am about to refer, I was four days from home. During part of the time, however, I was engaged in the discharge of professional duty. Mr Davidson, minister of Shiskan, requiring to be in Ayrshire, asked me to exchange with him on Sabbath. I set out for Arran on Friday morning, accompanied by my son, and having reached the mouth of Lamlash loch, we found a boat, that we had bespoke, awaiting us. The day was remarkably favourable, and the dredge was soon heaved into the

\* It has been got also by Mrs Balfour in Arran.

deep. Having rowed for some time, the boatmen said that they thought *she* was full. Highlanders make a very liberal use of feminine personal pronouns. *Her nain sel*, at one time, was not unfrequently heard. But though this has fallen into disuse, they still say “she’s a fine gun,” “she’s a good dredge,” “she’s a bonnie kirk;” and what for no, when we in our wisdom say of a stately ship, “*she* is a gallant *man-of-war*?”

To return to our dredge. She had all the appearance, when hauled, of being full *a la gorge*, yet eventually she proved quite empty. Such was her inordinate greed, that she had taken so great a mouthful of tangle, and other large seaweeds, that she was fairly choked, yet she was otherwise lank as an empty purse—a spectacle with which I wish none of my friends to be practically acquainted. The boatmen, quite indignant at having wasted their strength in tugging up what, without quoting Virgil, they were as much disposed as the bard to condemn as vile algæ, were beginning in their wrath to toss them back into the deep, when we, to their surprise, begged that they would haul them all into the boat, as we wished to examine them. They consisted chiefly of very large specimens of *Laminaria saccharina*, the puckerings of whose frond furnish nice lurking-places for various mollusca, and other marine animals. Some of them, indeed, have the power of clinging so closely to the elevated parts of the frond, that it is no easy matter to detach them. *Patella pellucida* is one of this description. Those we found on this occasion were

young and small, and even in this state they are beautiful; but they were not to be compared with the full-grown ones I saw in September 1850 at Portrush, on the coast of Ireland, where they seem to be common; and a frond of seaweed dotted with these pellucid limpets, adorned with her finest azure rays, is well fitted to elicit admiration.\*

We had not proceeded far with the examination of our cargo, till we observed what was deserving of our attention, and at that time it was quite new to us. Portions of the frond of *Laminaria* were pretty closely studded with what at first sight seemed *Ophiuræ*, but on observing that they were attached by a stem to the seaweed, we at once knew that they were the young of the Feather-Star—*Comatula rosacea*. Professor Edward Forbes, in his “History of British Star-Fishes,” says, “The history of the *Comatula*—the only crinoid animal at present inhabiting our seas, at one time so full of those beautiful and wonderful creatures—must present many points of great interest, not to the zoologist only, but also to the geologist. And in truth, the history of the feather-star is one of the little romances in which natural history abounds—one of those narratives which, while believing, we almost doubt, and yet, while doubting, must believe.” The history of the feather-star has excited much discussion in the scientific world. In 1823, Mr J. V. Thompson discovered in the Cove of Cork, a little

\* I have since seen at the Vicarage, Ecclesfield, equally good specimens on *Laminaria*, gathered by Mrs Catty on the coast of Yorkshire.

pedunculated crinoid animal, to which he gave the name of *Pentacrinus Europæus*. It resembled a minute *Comatula* mounted on the stalks of a *Pentacrinus*.\* It was very interesting as the first encrinite animal that had been seen in the European seas, and the first recent encrinite that had been rightly examined in a living state, the miniature representative of the fossil-stone lilies. The base of its column, which was flexible, bent and twisted at the animal's will, was expanded into a convex calcareous plate by which it attached itself to other bodies. From the centre of the plate arose the column, composed of about twenty-four joints. Round its uppermost joint was a row of jointed filaments. The body bore five bifurcating arms, each bifurcation consisting of about twenty-four joints. The youngest specimens found had neither column nor arms, but appeared like little clubs, fixed by a spreading base, and sending out from their summit a few pellucid tentacula. Mr J. V. Thompson published another paper on the subject, in which he maintained, that what he had called *Pentacrinus Europæus* was only the young of *Comatula*; that the feather-star began life as an encrinite, and afterwards so far changed its nature as to become a star-fish. He thinks it probable that the *Comatulæ* attain their full growth in one year. The arguments adduced by Mr J. V. Thompson, and subsequent observations made by others, sufficiently prove, that the *Pentacrinus* and the *Comatula* are only younger

\* View the figure, if you please, from "Forbes' Star-fishes," p. 11.

and older states of the same animal, the beautiful feather-star. Nay, Professor Forbes has seen the creature drop from the stem and swim about a true *Comatula*.

On this, and on subsequent occasions, we observed them of different sizes, the little ones being straw-coloured, and the larger ones, nearly an inch in diameter, beginning to assume their reddish hue.

Continuing our investigation, we found, as we expected, full-grown *Comatulæ*, having their rays or arms entwined among the roots of the Laminaria. The few that we had got before, were entirely of the fine rosy red colour; but when we afterwards got them in abundance, we observed that they not only differed from each other by being of different shades of red, but that many of them were party-coloured, having portions of the body and arms of a cream colour, producing a pleasant variety of appearance. When put into a basin of sea-water, they soon show that they can swim about. As Mr J. V. Thompson observes, their swimming is like that of Medusæ, the alternative stroke of their arms causing them to advance back foremost, even more rapidly than the Medusæ. Professor Forbes has observed, that they effect the movement by advancing the arms alternately, five at a time.

What the ends are that the benignant Creator has in view in rendering the *Comatula* a kind of fixture when it is young, we may not be able to divine, but we may be sure that it is for some good, and kind, and wise purpose. We may conjecture, that as a

number of other minute animals attach themselves to the Laminaria, and are constantly creeping along its slimy surface, the young Comatulæ are thus placed on good pasture ground, where food comes to them of its own accord. We admired the wisdom of a pair of foxes, that we lately observed had taken up their residence in a rabbit warren, where their little whelps could lie in ambuscade in the mouth of the hole, ready to spring on the first little cony that came heedlessly in their way.

But we soon had reason to see that He who made all things, and made all things wisely and well, has different ways of working. We found some young Barnacles—or more learnedly, *Balani*—acorn-shells, on this seaweed. They were firmly fixed on the tangle. In the case of the young feather-star, the adhesion was voluntary. Though *we* have not seen them moving from one part of the tangle to another, we have reason to think that, like sea-anemonies, and fresh-water hydra polypes, they can slowly glide along the tangle, or can, at will, let go their hold, and choose another point of adhesion, though, from being found closely congregated in family groups, we would be disposed to conclude that they are not erratic in their youthful tendencies. At all events, the period soon comes when the connecting stem gives way, and when, like the family group of creatures of a higher grade, they are to be scattered abroad, to buffet the billows, and to shift for themselves in the voyage of life. Very different in some respects is the history of the barnacles, the early part of which

is much more wonderful than that of the young feather-stars. Ovid begins one portion of his poetry by saying, "*In nova fert animus mutatas dicere formas corpora*," but these changes were as imaginary as the gods to whose power he ascribes the metamorphoses. The wonderful changes that natural history records are real, and they are such as none but the God of nature could accomplish. Though the *Balani* we at this time saw were so firmly cemented to the frond of the seaweed, that it was impossible to detach them, it is one of the discoveries of recent times that they were not always fixtures. Mr J. V. Thompson, whom we have already mentioned, was the first to observe that barnacles, when very young, are free, and can swim about like little crustaceans, having two eyes mounted on footstalks, and six pair of jointed legs, which, keeping stroke like so many oars, propel the creature forwards. The wonderful transformation of this little animal will ere long be described, in a monograph of the cirripedes, by the singularly interesting writer, Mr Darwin, author of the account of the voyages of the *Beagle*. When preparing his monograph, which I hope will soon be published, he asked my excellent friend Mr Smith of Jordanhill to say to me, that if I could get him some barnacles in a very young state, especially if yet unattached, it would be a great favour. In vain I looked for the little wanderers, for I did not then know how or where to look for them. One day, when I was examining a specimen of *Porphyra*, I observed some little dots on it, and using a magnify-



ing glass, I saw that they were very minute Balani, and having sent them to Mr Darwin, he was delighted with them. As the Porphyra, however, had been dried and pressed, and as the minute Balani had sustained some injury by the pressure, he very earnestly requested that I would send him some in a fresh unpressed state, on the same thin transparent substance. On examining young specimens of Porphyra growing on the pier at Saltcoats, I had the pleasure of finding on them exceedingly young Balani, and of seeing that the young mussel shells on the harbour wall were still more abundantly dotted with them. These were attached to the shells and seaweed; but mixed with the minute barnacles, I observed lying loose several little things of a brownish colour, and somewhat shaped liked young mussels. At first I could not imagine what they were, but finding them along with the young barnacles, I at last concluded that they were their larva, and taking them home and placing them in a tumbler of sea water, I had the pleasure of seeing one launching forth and swimming across the tumbler, bearing a resemblance to the figure which Mr Darwin had sent me of the barnacle in its free state. I sent a good store both of the young attached barnacles, and of the unattached larva, to Mr Darwin, who expressed himself exceedingly obliged to me for the cargo. At that time he was in a delicate state of health—away from home, without his microscope—so that what was sent was kept for future investigation. I trust that the members of the Royal Society, of whom I am one, will

soon be favoured with this monograph of the cirripedes, in which, from what he has already told me, we may expect most interesting matter. My curiosity is greatly excited to know something more of these little barnacles, and to have from his gifted pen the result of his deep researches. I shall not state, by anticipation, the wonderful things that he has discovered, as to the way in which the young barnacle cements itself to some foreign object; but we know enough of its history already to fill us with wonder. It is wonderful when the dead-like larva shows itself instinct with life, and sallies forth in frolicsome gambols. It is not left to roam in the dark; for, as we have said, it has a pair of eyes to guide it in its merry careerings, and it would do well to make a good use of them, and to drink in as much knowledge as it can in its youthful voyaging through its world of waters; for its voyages are soon to terminate, and its little eyes are soon to be closed. The playful gambols of infancy have not long continued, till, by a voluntary act, it cements itself to a seaweed, or a shell, or a rock, and then its eyes being no longer necessary to guide it in its movements, it either throws them off or covers them up in that multivalve receptacle, which, from its conical appearance, is regarded by many as a young limpet. Mentioning this to an intelligent young lady of a contemplative and poetical turn of mind, she said, "How awful that moment when its doom is determined for aye!—it would be a good subject for a poem."

Yet though following, in so far, the teaching of

nature, our little barnacles do not all act with equal wisdom. According to the law of nature, they must fasten on something; but this law leaves them at liberty to fasten on a seaweed, or to fix their habitation on a rock. When God says to the young of the human race, "Choose ye this day whom ye will serve," let them look at the barnacles, and be wise. Do your hearts say to you, "Let us enjoy the present?" You are like the barnacle which cements itself to the tangle: learn then a lesson from its fate. In its own self-conceit, it will think itself wise and happy. It is riding safely at anchor, and yet it enjoys as wide a range as the rooted seaweed will permit. By the ebb and flow of the tide it is kept in constant motion; and even amidst the rushing of the summer billows, it may be as happy as children when enjoying the exhilarating amusement of the swing. But gentle zephyrs blow not for ever; summer and autumn come to a close; winter, with its rude blasts and raging storms, scowls wildly upon the troubled sea; the tossed tangle is torn up from its roots, and the poor adhering barnacles, being drifted along with it to the shore, soon die in the open air.

Not so they who have fixed on a rock. Even in summer they are safe and happy, and when winter comes they are safe and happy still. The winds may blow, and the floods may rage, and the proudest billows of the sea may assail them, but they remain unskathed—safe as the unshaken rock to which they adhere. Youthful reader, there is for you a better rock—the Rock of Ages, the rock of your salvation.

To this rock cling—on this foundation build; against this rock the gates of hell shall not be able to prevail, so that your happiness is secured not only for time, but for eternity. Like the Psalmist, you may say, “God is our refuge and strength, a very present help in trouble: therefore will not we fear though the earth be removed, and though the mountains be carried into the midst of the sea; though the waters thereof roar and be troubled; though the mountains shake with the swelling thereof.” *Cirripedes*—the name given to the tribe to which the *Balani* or acorn-shells belong—lead us to speak of another genus of this family to which the name of barnacle is more generally given, viz., *Lepas anatifera*. *Cirripedes* means curl-footed; and were any of our young friends to take a stone on which the *Balani* have fastened, and to place it in a tumbler of seawater, they would soon get an explanation of this term. They would soon see, from the opening at the top of the shell, a little filmy hand protruded, which would continue incessantly to unfold, and then to curl itself up in a way that would fill them with wonder and delight. The workmanship is most exquisite, and with that little filmy hand it grasps and conveys to its mouth the invisible animalculæ that abound in the sea. But if my young friends fall in with *Lepas anatifera*, which is more properly the barnacle, they will see at once the appropriateness of the name *curl-footed*; for, even when it is at rest, a portion of the curl or *cirrhus* remains uncovered, much resembling an artificial curl of hair. This

barnacle also in its infant state is free, and could swim about, guided in its movements by one eye; but when it gets older, it fastens itself by a long fleshy pedicel to some floating substance, to which it becomes permanently adhesive. Generally it is a piece of floating wood to which they adhere. On one boating excursion in Arran, we found about a score of them upon a piece of floating cork. On another, the stranded mast of a vessel was covered with hundreds of them; and as the wrecked mast had been long at sea, they had attained their full growth, so that the fleshy tubular pedicel was nearly a foot in length. The poor things retained life for a long time after they were cast on the shore; and as the shelly part at the extremity of the tube had the appearance of the head of an animal, some people, on seeing them writhing about, thought that they were some kind of sea-serpent, and were afraid to approach them.

Not long ago, I got the tubular stem of a seaweed, beautifully adorned with these barnacles. For a time I could not discover to what seaweed this tubular stem, eight feet in length, belonged. On reading, however, in *Physicologia Britannica*, of *Laminaria longicruris*, a native of northern seas, and which should be looked for on the northern shores of Scotland, I conjectured that my long hollow barnacle-bearing stem must be a portion of this long-shanked *Laminaria*. I therefore wrote to Professor Harvey, and sent the fragment, eight feet in length, to him in Dublin; but he had left Dublin before it arrived, and soon after he wrote to me from the Giant's

Causeway, that he had not yet seen my specimen; but that, a few days after getting my letter, he had got, near Dunluce Castle, a stem of the true *Laminaria longicruris*, and it was curious that, like mine (for it was the veritable one also), it was laden with barnacles, showing that they had been long at sea in their passage, it may be, from Newfoundland or Greenland; and it was remarkable also that, so near the same time, they should make their first appearance in Great Britain and Ireland.\*

But I must not forget to tell that these pedunculated barnacles which were regarded by some of my friends as of the sea-serpent tribe, were considered by the naturalists of the good olden time as the young or the eggs of sea-birds. Hear what honest Gerarde records in his "Herbal," in 1597:—"There are found in the north parts of Scotland, and the islands adjacent, called orchades, certain trees, whereon do grow certain shells of a white colour, tending to russet, wherein are contained little living creatures; which shells in time of maturity do open, and out of them grow those little living things, which, falling into the water, do become fowls, which we call barnacles." This he records as information derived from the writings of others, and also from the mouths of people of those parts, which he says may very well accord with truth; adding, in the simplicity of his heart, and with no intention to deceive,—“But what our eyes have seen, and our hands have touched,

\* I have learned that it had been got in Orkney in 1838, and in Banffshire in 1850.

we shall declare. There is a small island in Lancashire, called the Pile of Foulders, wherein are found the broken pieces of old and bruised ships, some of which have been cast thither by shipwreck ; and also the trunks and bodies, with the branches, of old and rotten trees cast up there likewise, whereon is found a certain spume or froth, that in time breedeth into certain shells, in shape like those of a mussel, but sharper pointed and of a whitish colour, wherein is contained a thing in form like a lace of a silk, finely woven as it were together, of a whitish colour, one end whereof is fastened into the inside of the shell, even as the fish of oysters and mussels are ; the other end is made fast unto the belly of a rude mass or lump, which in time cometh to the shape and form of a bird. When it is perfectly formed, the shell gapeth open, and the first thing that appeareth is the foresaid lace or string ; next come the legs of the bird hanging out, and, as it groweth greater, it openeth the shell by degrees, till at length it is all come forth, and hangeth only by the bill. In a short time it cometh to full maturity, and falleth into the sea, where it gathereth feathers, and groweth to a fowl bigger than a mallard and lesser than a goose." Hence the name *Lepas anatifera*, or *Duck-bearing*, is given to this barnacle.

The barnacle-geese, or duck, is a fine bird, weighing about five pounds, and measuring more than two feet in length, and nearly four and a half, when its wings are expanded, in breadth. In spring, it goes far to the north to breed, and to spend the summer ;

but early in winter it may be found, among other places, in Belfast Lough, and also on the Clyde, above Port-Glasgow; and as it is rich, delicate eating, it sells at a high price. Romish priests and monks, who know what is good for food, availing themselves of the fabulous origin of the barnacle, on two grounds claimed it as a *bonne bouche* in time of Lent. It was the tree goose; and surely the strictest observer of Lent might eat, on meagre days, what had once grown on a tree; or giving ready assent on this point to the doctrine of development, long before Lamarck had propounded his theory, or the author of the "Vestiges" had walked in his steps, they turned it to excellent account in the way of enriching their bill of fare; for, they said, as the barnacle is only a shell-fish fully developed, it cannot possibly be prohibited during the flesh-forbidding season of Lent.

We had not yet quite done with our budget of seaweed. Every frond had to undergo a strict scrutiny before it was returned to the deep. We shall allow much to pass in silence—many pretty *lepraliæ*, for instance. What we are next to mention abounded on several of the seaweeds; and we mention it because, though very common, it is often not observed, or not understood. A very intelligent lady, a sincere lover of nature, sending me lately some algæ and adhering zoophytes to be named, said, "But what are these little white comfits with which the seaweed is studded?" The comfit was a little spiral shell, adhering by the base to rocks, seaweeds, &c., whose whirls, or volutions, are placed laterally, so that the



last whirl is on the outside, forming the margin. There are various kinds, two of which are very common—the one in question, which is without gloss, the other, called the *lucid spirorbis*, as it is glossy and pellucid. It is smaller than the other, but more beautiful: the last whirl generally projects upwards, and is free, unconnected with the object to which the others adhere. Along with *spirorbis*, which abounded, there were many specimens of *serpula*, nearly allied to *spirorbis*. The most common one is *serpula triquetra*, which also adheres to stones and shells, or twists round the stems of seaweeds. I probably would not have mentioned either *spirorbis* or *serpula*, had I not wished to direct the attention of my young readers to the beauty of the animals that inhabit them. When you remove them from their native element, you see nothing but the shelly habitation; but it is no difficult matter to induce the inhabitants to put out their heads—and their heads are worth seeing; they are beautiful. Place the stone or shell to which they adhere in a basin of seawater, and in a little while the whirled *spirorbis* will push out from the mouth of its contorted domicile its head, furnished with ciliated tentacula, and a somewhat funnel-shaped proboscis, and, outvying the *spirorbis*, the *serpula* will straightway exhibit two feathery tentacula, and a trumpet-shaped proboscis. The proboscis is finely striated, and its margin crenated, while the tentacula are beautifully barred with various colours; and what surprised me was, that, on the same stone, individuals apparently

of the same species differed so much in colour; in one red, in another blue, green, or yellow, being predominant. Some of the other species of *serpula* are still more distinguished for beauty. One of the largest is *serpula tubularia*; but it is much less common than the species of which we have been speaking, though not unfrequently coming up in the dredge attached to an old bivalve shell. In its young state, it is generally cemented all along to the surface of the valve; but having reached the margin, it continues its growth, so that at times two or three inches of the tube are free from the shell, gradually widening till it equals in diameter a goose quill, and ending somewhat like a trumpet. The tube externally is white, but the trumpet-mouth is often of a rosy colour. "Within this cylindrical tube," says Professor Harvey, in his very interesting "Seaside Book," "the animal can wholly retreat, closing the aperture by means of a shelly plate affixed to a fleshy horn which rises at one side of the mouth. When the animal displays itself, as it opens while seeking for prey, its head, surrounded by the richly-coloured collar of gills, composed of numerous slender pieces, pectinated on their inner faces, and spreading like a starry flower, is protruded for some distance from the tube; and here it waits, ready to seize on any small animal whose curiosity or misfortune may lead it within the reach of its jaws."

While the investigation was going on, my young companion had been keeping a good look-out for nudibranchs, in which he had been encouraged by

finding one that was new, to which Mr Alder, in figuring it in his beautiful work for the Ray Society, had given the name of *Eolis Landsburgii*. They are almost sure to escape the notice of the unpractised, because, when removed from the water, they roll themselves up in small bulk, and seem a shapeless mass of gelatine on the seaweed to which they adhere. *Eolis alba*, *Eolis coronata*, and *Eolis Drummondi*, were found; but they were not valued, because they were not regarded as rare. At last he found one that he considered quite a prize; for on being placed in a phial of sea-water, we saw that it was new to us both. A graceful form exposes nudibranchs to danger, as well as creatures of a more exalted rank. The beauty of this little marine mollusc led us to send it, all alive in its crystal cage, all the way to Newcastle-on-Tyne, where it was heartily welcomed by Mr Alder, who pronounced it both rare and beautiful—*pterochilus pulcher*, to be figured in the monograph to which we have already referred.

Lengthy as we have been in the description, the examination of the seaweeds did not in reality occupy many minutes. No sooner did our boatmen give notice that the dredge was heavy, than we heaved the weeds into the sea; and having hauled the dredge, we emptied its contents on the board across the bow. This time it was chiefly filled with millepore sand and broken shells. There were some fragments also of *Spatangus purpureus* of greater size than any we had ever got alive. Several beautiful specimens of *Echinus sphaera*, *Echinus miliaris*, and *Amphidotus roseus*,

made their appearance ; but as they were not much wished, they were cast back into the sea ; and we doubt not that they felt particularly obliged by being thus summarily dismissed from our presence. In some of the broken bivalves there were lodged masses of transparent jelly, which, on being placed in a tumbler of sea-water, turned out, as we expected, to be beautiful *Ascidia*. Among them was *Ascidia virginea* ; but there were others of still greater beauty, with whose names we were unacquainted. There were also several nests of *Lima hians*, but these had ceased to be matters of wonder to us. We got one specimen of *Lima Luscombi*, which is rather rare on the west coast. A valve of the much rarer *Lima subauriculata* was observed, but it was of small size, and of no value except that it gave the hope that an entire specimen might be found.

Hitherto we had kept within the bay, but as the day was very calm and fine, we thought that we would try the ground on the outside of the island. Steering clear of the rocks by which the Holy Isle on this side is girt, and which are richly fringed with gigantic *Alaria* and tangle, we let down the dredge, which soon brought up a mixture of sand and broken shells, which on being searched yielded some little things for the cabinet. Among other things, we got some good specimens of a pretty *Pecten tigrinus*, of which there are several varieties. One or two specimens also were found of what I at first hoped might be a new *Pecten*, seeing that on one of the valves there were many little prickles. I afterwards found

that it was *Pecten striatus*, which, because of these prickles, when young, had been named *Pecten spinosus* by one, and *Pecten aculeatus* by another conchologist. The usual size of this fine shell is only about half an inch in length and rather less in breadth. One of the finest specimens ever seen of this *Pecten* I had the honour of receiving from Lady Emma Campbell, dredged near Inverary. It is eleven lines in length, and about as much in breadth. I am constrained to say that one dredged by Major Martin in Lochfine rather surpasses it, being of equal size at least, and of richer colouring. A subsequent haul near this place brought us up several specimens of *Dentalium entalis*, which, though often found in dredging, was prized by us, as we had never once found it drifted out on the shore. Some specimens of *Trochus millegranus* were found adhering to *Laminaria*, and some among the sand. Two specimens of the beautiful milk-white *Eulima polita* were added to our store, and one or two young specimens of *Terbratula caput-serpentis*, which would have been mightily prized some years ago, when first discovered as British by Professor Fleming, but which has considerably fallen in value in consequence of being dredged by several naturalists in considerable abundance at Oban, and in Lochfine, where they are at times in beautiful groups, clustered on old shells, and sometimes one upon another.

But the happiest day has the fleetest wing. On looking round, we were surprised to find that the shadows of the mountains were beginning to lengthen.

Moreover, as we had brought no sea-stores with us, though the feast of shells we had been enjoying gave great delight to the eyes, there was another organ which begun to be querulous, and to demand something more substantial than a feast of shells. We therefore gave a hint to our boatmen, which did not require to be repeated, that the sooner we were at Lamlash the better. Accordingly, less than half an hour's steady rowing brought us to land, and we soon found ourselves safely ensconced in honest David Hodge's lodgings, which from former experience we knew would be very comfortable.

We had intended to spend the forenoon of next day in the same manner, but even in Arran there is not an uninterrupted succession of halcyon days, and though next morning did not blow a gale, the breeze was too stiff for boating, and, therefore, after breakfast, we set out to walk along the shore to Invercloy. This is rather rich ground for the naturalist, and yet on this windy forenoon we did not fall in with much that was interesting. In the rock-pools near Clachland point we got *Bryopsis plumosa*, and what is even more beautiful, *Polysiphonia parasitica*. Where you find a rock-pool lined with *Melobesia*, there you may hope to find this little favourite, and never is it so beautiful as when fresh from the pool, for then its colour is bright and lively. This is one of the algæ that thrive better in Scotland than in the South of England, where it is very diminutive. I once thought that the specimens of it found on our West Coast were the finest in Scotland, but I have lately

got some gathered by Mrs R. M. Stark, at Dunbar, on the East Coast, that at least equal ours. This forenoon we fell in with a habitat, where we found the finest specimens of *Chylocladia articulata* that I have ever seen in Scotland, though not at all equal in size to specimens that I have seen from Ireland. Very good specimens of *Callithamnion Hookeri* were gathered, though at some risk, for they were growing on the steep face of a rock washed by the surge, so that the moment for seizing them was when the dashing wave was retreating. *Rytiplhva thuyoides* and *Rytiplhva fruticulosa* were also found, and in a little stream of fresh water, purling through among the rocks, we found *Tetraspora gelatinosa*, and remarkably fine specimens of the common *Cladophora glomerata*. I had almost forgot to mention, that in tearing up by the roots some of the Halidrys in the tide pools, we got specimens of *Asterina gibbosa* adhering to the stems.\*

By the time we reached Invercloy, the day had assumed a very threatening aspect. My companion, who meant to return to Ardrossan that evening, made the best of his way to Brodick to catch the steamer when she touched there, and I learned afterwards that they had a stormy passage to the Ayrshire coast. As I had spent all the forenoon in scrambling among the rocks, I would have been well pleased to take up my abode with kind friends at Invercloy, or at Glen Sherrig, where I was pressed to stay; but the morrow

\* These, however, were greatly inferior in size to specimens I lately got in Devonshire from Mr Templar.

was the Sabbath, and as I had to officiate in the church at Shiskan, it was expedient that I should that evening be on the field of action, which was about ten miles from Invercloy. The ascending road, called the String, is for a considerable way far from being a very gentle acclivity, so that I had to "set a stout heart to a *stey brae*," and to move onwards. I had not proceeded far till a storm of wind and rain ensued. Owing to the breeze, an umbrella was unmanageable, so that I had to give the wind and weather fair play, and to allow them to do their utmost. I found, as I had occasionally done before, that having got completely soaked, a person moves on quite cheerily, for he knows that he cannot be wetter. When I reached the highest part of the ascent, the wind and rain, proceeding from the west, and having now no interposing barrier, came with great fury; but I was now descending, and we have poetical authority as well as constant experience for saying, "*facilis est descensus*." When I was about half-way, an open carriage passed me, containing six ladies and gentleman. Though I was on foot, and they had the aid of chariot wheels, I flattered myself that I had the advantage of them. I was on duty; they were "on pleasure bent," and had left Brodick while it was yet fair, in the hope of a pleasant excursion to King's Cave, Drummadoon, and Blackwater foot, to return again to Brodick in the evening, but carrying back, I suspect, no very pleasant reminiscences of Highland scenery, or of their pleasure jaunt. They soon passed me, and wishing them a delightful



excursion, I moved on towards the Inn at Shiskan. With the exception of home, there is nothing like an inn to a wet and wayworn traveller, especially a Highland inn like this, where there was not only a hearty welcome, but a degree of kindness that money could not purchase. I made my escape, however, from their kindness as soon as possible; for having no change of raiment with me, and knowing how dangerous it would be to sit wet, I requested to be shown to my bed-chamber, where I was soon snug in blanket-bay, while my dripping garments were suspended before a good peat fire in the kitchen.\*

Next morning, though the storm had abated, it was not quite over. Having walked to the church, about a mile distant, I was surprised to find a good congregation assembled on such a day, though many of them had come several miles, and though they knew that I could not address them in that ancient language which is music to the ear, and sweeter than music to the Highlander's heart.

On Monday morning I rose refreshed, and was glad to find that nature had laid aside her frowns and tears, and shone forth with a smiling aspect. I set out then to visit a cave by the seaside, well

\* In some places it would be necessary to explain where blanket-bay is to be found. When I was lately in Paris, the weather being cold, I told one of the waiters, who professed to speak English, that he might tell the *femme-de-chambre* to give me an additional blanket. "Yes, Sar," was the answer; but after wondering a little he said, "Fat (what) is a blanket?" I had then to define a blanket, saying it was *un drap de laine*. "Oh, oui, Monsieur," said he, "*un couverture*."

known to the natives of Arran ; in which, during the palmy days of Moderatism, when there was a great scarcity of Gospel truth, they who were the salt of the island were accustomed on Sabbath to assemble, to sing God's praises and read his Word ; to hear it expounded by some of the most gifted of the elders, and to raise their joint supplications to the Most High, that he would send a plentiful rain to refresh his heritage when it was weary. Meeting a person on the shore, I asked him to show me the way to the cave. He said that it was near at hand, and that he would be happy to accompany me to it ; adding, that he had the lease of the farm in which the cave was, and that therefore he was well acquainted with it—in some respects too well, as I afterwards found. I had not been at it before ; but on entering it, I saw that it was well fitted to be a substitute for a church, when there was no more commodious place of worship. It was not the workmanship of man, but of the Lord, whom they assembled to worship ; and this was fitted to solemnize their minds. These massive pillars were not hewn and raised by creatures of the dust, nor could the strength of a thousand giants have cast over it that massy canopy which these rugged pillars sustained. It spoke to them also of those olden times when Popery prohibited the pure worship of God—when, at the risk of their lives, their forefathers met in mountains, and dens, and caves of the earth ; and, when destitute, afflicted, tormented, they were required to seal their testimony with their blood. It pretty much resembled the

King's Cave, on the same side of the island. The mouth of the cave was sheltered from the blast in more directions than one, and yet the sun could cast his beams so far into it as to give the worshippers a good deal of light; and it was so capacious, as easily to accommodate some hundreds of persons. We doubt not that it might be said of it in days that are past, "This man was born there, and that man was born there."

On questioning my guide, I learned that they do occasionally worship in this cave still. I thought that he seemed sad when I was speaking to him respecting these recent meetings; and I was much affected on hearing from him that an event had taken place in that cave not many months before, which made an indelible impression on his mind. At the beginning of that very year they had had a religious meeting in the cave, to thank the Lord for the blessings of the past year, and to implore the continuance of his goodness and mercy during the year on which they were entering. Among those assembled, there stood, near the mouth of the cave, on the very spot on which we then stood, his own dear son, a stout young man. The cave, in harmony with the gentle sea-waves without, had re-echoed the song of praise. The first prayer had just been begun, when the young man staggered and fell, uttered a single groan, and in a few moments life was extinct. He had been thoughtful and serious before, and they had hope in his death. But how exceedingly striking was it to all, and how peculiarly affecting to his parents and

friends ! and how acute must have been the father's feelings when he was thus renewing his griefs by informing a stranger of this heart-rending event ! In the midst of life we are in death. In seeming health and strength, there may be but a step betwixt us and that decisive change. Let us up and be doing while it is called to-day. God is saying to us, "Give all diligence." "Whatever thy hand findeth to do, do it with thy might ; for there is neither work nor wisdom, nor knowledge nor device, in the grave whither thou goest." "Now is the accepted time, now is the day of salvation."

From this place, where the King of Terrors had lately been showing his irresistible power, I went to visit the grave of one whose mortal remains had now been sleeping in the dust of the earth for more than a thousand years. This was a holy man of God, Saint Molios, and more deserving of being called a saint than many that have borne that name. He had been the disciple and friend of the still more celebrated St Columba ; and after enjoying the society and the instructions of his distinguished master in Iona, he had been sent forth to carry the light of the gospel to others who were in darkness ; and, as we have elsewhere said, took up his residence in the little mountain-island which lies in the mouth of Lamlash Bay, and renders it, thus protected, peculiarly safe anchorage-ground. His great business, however, was to hold forth the light of life to those who were involved in darkness, and to induce those who were perishing in ignorance and sin to cast their anchor

within the veil. In all likelihood, it was the desire of being more extensively useful that made him remove from the Holy Isle, and take up his residence at Shedog, on the west side of Arran, where he died and was buried; and where, in the burying-ground of the little chapel, his grave is to be seen to this day. We assuredly are not saint-worshippers; and had Molios been canonized by the Pope, we would not have given ourselves the trouble of visiting his grave: but the Pope and his cardinals, had he been in their power, instead of canonizing him, would have committed him to the flames. He was one of the Culdees; and if the word Culdees, which is of obscure origin, be a corruption for *Cultores Dei* (worshippers of God), as some suppose, then it may have been assumed honourably to distinguish the worshippers of the Creator from the worshippers of the creature: the pious worshippers of the one living and true God—Father, Son, and Holy Ghost—from the idolatrous worshippers of angels, and saints, and graven images;—the worshippers of Him who is the true bread of life that came down from heaven, from the worshippers of a wafer-god, which the hand of man and the mummery of a Popish priest had formed. Believing him who lay buried in this little Highland churchyard to have been a saint, not of man's making, but of God's making—to have been sainted, not by the canon of the Pope, but to have been made holy through sanctification of the Spirit, and belief of the truth, and sprinkling of the blood of Jesus Christ—we approached the spot with reverence, and with a warmth of devout regard,

which the numerous symptoms of neglect could not effectually chill. The graveyard is now enclosed with a wall, and when the gate is not open you can enter by steps built into the wall; but I was sorry to find that one of the steps was formed of a portion of a lettered gravestone, now become partly illegible by the rubbing of feet, but by the antique form of the letters leading me to suppose that they had formed a portion of the inscription on the saint's tomb. When first erected, it must have had a highly respectable appearance for the time. A considerable space seems to have been enclosed with a low parapet, which has nearly disappeared. The gravestone, we doubt not, rested on pillars, but they are gone; and as it had been allowed to lie on an uneven surface, it has been broken in two by those who have stood on it. Luxuriant nettles also furnished additional symptoms of neglect; but the figure on the stone, in pretty bold relief, bore unmistakeable marks of antiquity; and the long solemn countenance of the portrayed saint made me lose sight of the symptoms of neglect, and carried me back to the remote age when this faithful servant of God, after a pilgrimage of 120 years, laid down his earthly house of this tabernacle, to have a building of God, a house not made with hands, eternal in the heavens. We have pleasure in transcribing what follows, from the new statistical account of the parish of Kilmorie, drawn up by the Rev. M. A. Macbride, a native of the parish, and now Free Church minister of North Bute:—"In the middle of the burying-ground at Clachan is the grave of St Molios, 'the

bare-headed servant of Jesus.' His first residence was in the Isle of Lamash, or the Isle of Molios; but he afterwards removed to Shiskan, and fixed his residence where now repose his remains. He died here at the advanced age of 120. On the tomb which covers his grave, and which is said to have been brought from Iona, the figure of the saint, arrayed in the robes of a mitred abbot, with chalice and crozier in his hands, is not inelegantly sculptured. Till within the last fifty years, it was customary for females, after their confinement, to repair to the grave of the saint, and there deposit upon the stone a silver piece, as a thank-offering for their recovery." We doubt not that this superstitious and sinful custom was one of the many wicked inventions of Popish priests to corrupt and defraud their victims. It would never have been allowed so long as the pure Scriptural doctrine of the Culdees prevailed. It is well known that the Pope and his emissaries hated the Culdees because of the purity of their faith and worship, and continued their cruel persecutions till they succeeded in rooting them out. A regard, however, for the memory of the most distinguished of the Culdees continued to linger among the people; and as when they were dead, and for many years buried, they could do the priests no harm, they would profess to be their admirers; would laud their sanctity; assert, we doubt not, that their relics were invaluable, and that blessings well worth paying for could be got at their graves. Instead, then, of destroying the monument of Molios, they might add to its garniture,

that they might the more successfully practise their delusions, and persuade the people to look away from God, and to remunerate the saint—or, in other words, his treasurer, the priest—for preserving the life of mother and child. Even to the present day the Papists claim Molios as one of their saints; and a little before I visited the place, the son of a Papist residing at Shiskan having died, the father, in the hope of benefiting the soul of his child, caused his body to be buried close by the grave of the saint, though the Pope of the day would have branded Molios the Culdee as one of the worst of heretics, and would have excommunicated and cursed him with bell, book, and candle.

The next excursion I had was in August 1849. With this I was not only greatly delighted, but highly honoured. But I must curb my vanity, and refrain from giving names. A young lady of one of the noblest families in Scotland, who was then in summer quarters near Lamlash, had invited me to visit her, and a day's dredging was proposed. The party consisted of the noble lady, another intelligent lady who was living with her, and a gentleman and his daughter from Edinburgh, who were then in one of the adjoining villas. The day was every thing that could be wished for a marine excursion in a Highland loch. Lady —— had been out before in a yacht where dredging was going on, but this was the first time she had taken an active hand in it; and most active and zealous did she show herself. She had a fine collection of shells, that had been



dredged in Lochfine, near Inverary; but she got some in Lamash Bay that are not found in Lochfine, though Lochfine probably furnishes the richest dredging ground in Scotland. The other ladies entered most heartily into the work, and enjoyed it greatly. From the first they could handle the beautiful shells that were turned out of the dredge; but it was a while ere they could summon courage to lay a finger on a crab, or a sea-urchin, or a starfish. Even the beautiful rays of the rosy feather-star they thought were too like serpents' tails to be safely meddled with. On emptying the second dredgeful on the board, *Ebalia Pennantii* walked out from among a number of broken shells. Laying hold on it, I said to one of the boatmen, "Take care of that." "*Pour-quoi?*" said Lady —. "Because it is rare," said I, "and I wish to examine it." I hope it took care of itself, and got back into the sea; for, on looking for it afterwards, it could nowhere be found.

We landed on the Holy Isle, where we had some refreshment—the large boulders with which the shore was covered being good substitutes for chairs and tables. Among the boulders that were within high-water-mark, we found great store, cast out by the tide, of an alga, rather rare in Scotland, and prized in the south of England, because not at all got there. It ranked for a time as a distinct species, under the name of *Rhodymenia sobolifera*, but it is now regarded as a northern variety of *Rhodymenia palmata*. It is a large plant, six or seven inches in length, much divided, and the colour generally a pale brownish

purple. It is very different from another variety of *Rhodymenia palmata*, which I found growing on submerged rocks at low-water, in the Island of Lismore, Appin. This is a pretty small variety, not two inches in length, much cleft, and of a dark purple colour.

After we returned to the boat, another pleasure party in a boat came near to us, and one of them addressed me by name. Even after I had conversed with them for a good while, I could not imagine who they were; and I was not a little surprised when I discovered that they were two of my intimate friends who had been speaking to me, and who, after a busy season of clerical duty, in which they do not spare themselves, were spending some days in healthful recreation in Arran; and having taken to the sea, had assumed a dress suited to their piscatory employment. The party consisted of Mr and Mrs Grant, from Ayr; and Mr and Mrs Borrowman, from Glencairn.

Though much that was highly interesting was got this day, there was little, I think, that has not been described before. After a delightful excursion, we returned to Lamlash. They who spend a day in dredging must lay their account with a very busy evening, if they wish to preserve in good state what has been brought from the deep. The ladies accordingly, who had been so active during the day, were not less so during the evening, and fully two hours were occupied in preparing for safely storing up what they had obtained during the day. Part of the next day was spent in dredging, outside of the

loch to the north of Clachland point. The only things got on this ground, different from those dredged inside of the bay, were *Crenella marmorata*, and *Eunice tubicola*. *Crenella marmorata* has been repeatedly dredged nearer to Corrigils, by Major Martin, and always buried in clusters in the coriaceous coat of *Ascidia mentula*, or *Ascidia rustica*. We used to regard this as *Myilus* or *Crenella discors*; but Professor Forbes, in his excellent history of British Mollusca, now in the course of publication, points out the difference betwixt the two. *Crenella discors*, instead of burrowing in the coats of *Ascidia*, may be found among the roots of *Laminaria* and *Corallines*. In the Irish sea, off Anglesea, it is found in strong currents, enveloped in nests formed of fragments of *Flustra foliacea* and masses of sand agglutinated together, and combined by byssal threads. *Eunice tubicola* is, as the specific name implies, one of the annelids that dwell in tubes. The tube of this one is like a small quill. You may have an idea of the animal that inhabits the tube by examining the very common, but very curious lug-worm (*Arenicola piscatorum*) inhabiting the sand, and dug up as bait by fishermen. One of this tribe of tubicolar annelids (*Sabella alveolata*), though common, I believe, in many places, I have never seen in the West. We gathered it in abundance in Ross-shire, on the shore near Fortrose, opposite to Fort-George. I understand that it is very often attached to rocks and stones, but all the specimens I saw of it in Ross-shire were attached to the roots of the great

tangle. The tubes were formed of sand, but they were very inferior in workmanship to a sand-formed tube, some specimens of which we dredged, but which are more frequently found buried in the sand in shallow water. In this case, however, the tubes are not cemented together, like those we have now mentioned, but each cell is separate. Many must have seen *Pectinaria Belgica*, as it is called by some, or the golden-headed amphitrite, as it is called by others. The empty tubes are often found in considerable abundance on the shore after a storm, two or three inches in length, and at the upper end about the thickness of a goose quill, but tapering gradually towards the other end, which is not half the thickness. It is formed, you would say, of a kind of sand-paper, for it is smooth as paper, and so thin as to be, in some degree, transparent; and in reality this elegant little tube is wholly made of particles of fine sand closely cemented together. We have heard of a certain clever personage attempting, but unsuccessfully, to form ropes of sand; but here we have a handsome house of sand, which at times you may find on the shore inhabited; and if placed in seawater you will soon see protruded in part from its mouth the golden-coloured head, and the forefeet of the inmate of this tastefully constructed tube. There is another one which is still more frequently found on the shore, *Terebella conchilega*. The tube in this case is formed of sand and a sprinkling of broken shells, with a greater admixture of gelatine than the other, for it can be bent without breaking.

How fleet the foot of Time, aged though he be ! Nay, contrary to the common course of nature, the older he is, the fleeter he becomes. When we are young, he dallies with us, and seems to delight in us ; and 'that we may enjoy more of him and he more of us, he seems to exercise a kind of elasticity, extending himself to more than double length, so that a week appears a month, a month a year, and a year more than an age in prospect, and even in retrospect a period of considerable duration ; and we, ingrates that we are, even though we are happy in his company,—except, it may be, during very, very long hours at school,—often wish that he would quicken his pace, and hasten the happy time when we, who are only little urchins, shall be big boys and girls ; and then, when we are big boys and girls, do we not wish that Time, instead of moving with a sedate step, would take a long leap, and carry us along with him, that, no longer in a lingering transition state, as raw boys, and awkward girls, we might at once cease to be unnoticed nonentities, and shine forth in the enviable rank of dashing young gentlemen and blooming young ladies ? When that rank is at last reached, by what we think the slow process of nature, we begin to find that our old friend Time is no longer a laggard ; we know ere long by experience that the day of youth fleets fast away ; fain would we then put a drag on the wheel, but it hurls on with accelerated speed. We might expect that he would begin to hirple when old age approaches, but then, like the ostrich in the desert, in striving to escape from us he

plies both feet and wings; and if we have not prized and kindly entreated him when he courted our smile, the moment of revenge has come; he looks at us with a ghastly, sardonic grin, flaps his sable wings, and vanishes from our sight for ever!

We were led to exclaim, "How fleet is the foot of Time!" on observing by our notes that the next excursion had brought us to the summer of 1850. Early in the season, the Ayrshire Naturalist's Club was formed for the promotion of natural science. According to their regulations, they were to meet three or four times for a day's excursion during the summer half-year, and once or twice during the winter half-year to read essays prepared by the members on topics connected with the various branches of natural history. Their first meeting was at Ayr, and it proved a very agreeable one, the day being favourable for their excursion, except that winter was still lingering in the lap of May. Their next meeting was at Troon, when one party went out to dredge, and another party went to botanize in the fields and woods about Auchens, and to geologize in the quarries near Dundonald. These excursions, however, fall not within our present range, so that we pass them summarily over. The third excursion, on the 17th July, was to the Island of Arran, and therefore demands our attention. The members of the club came by railway to Ardrossan, and sailed in the daily steamer to Arran at 10 o'clock. A meeting was held in the cabin of the steamer, when three gentlemen were elected as new members of the club,—one of

them, who resides in Edinburgh, as a corresponding member. Afterwards, one of the members, according to previous appointment, furnished, for the inspection of the meeting, dried specimens of the rarer plants in the parish of Dundonald, which had been the botanizing ground at the meeting in June. The rarest plant in the parish, *Hippocrepis comosa*, had not been fallen in with; indeed, we have heard of its being found there only by two persons. The habitat is on the Castle Hill; and we would recommend any botanist who happens to be in that quarter to make the search, for though he should not find the plant, he will not miss the castle, an old royal residence, and the scenery around, as well as the distant views, are exceedingly delightful. But it is not with Dundonald that we have now to do, but with Arran, which, by the time we had finished this portion of the business, we were nearing, and on returning to the deck, Brodick Bay, and Brodick Castle, and Goatfell, and Glenrosa lay before us in all their grandeur and loveliness, basking in the beams of a delightful summer day.

One division of the club landed at Invercloy, to explore the shore from Spring Bank to Lamlash; but as this ground has been so lately traversed by us, we shall pass over it at present in silence. Another party proceeded in the steamer till they met, at the mouth of Lamlash, with two dredging boats that had been previously bespoke. The day was most favourable, and was spent right pleasantly by both parties: and as some of the members remained two days, and as Major Martin, our most zealous and suc-

cessful dredger, continued three days at the work, the excursion was more productive than usual.

It would lead to much repetition were we to mention all that was got. We would not mention the *Limas*, as these beautiful creatures, and their coral nests, are elsewhere described, were it not that, on this occasion, we observed, as we did also afterwards, that they do not always keep by one order of architecture. In some places of the lake we noticed that their habitations were not formed of the millepore-coral, but of fragments of shells. Whether this was owing to a scarcity of coral as building material in their neighbourhood, or whether it was owing to diversity of taste, we cannot say, but certainly one would not have supposed, on looking at their workmanship, that the coral-masons and the shell-masons were children of the same family, which, nevertheless, they seem to be. We never saw birds of the same species differing so much in the fabric and structure of their nests. The coral nests and the shell nests differed as much in fabric and form, as the nests of the mavis and magpie. The coral nest was comparatively smooth without, and, like the nest of the mavis, plastered within. The shell nest was unplastered within, and outside it was almost as rugged, and as well protected by sharp processes, as the nest of the magpie, with its impregnable fortification of thorns. The shell nest, about the size of a man's hand, was a rugged mass of sharp-pointed fragments of broken shells, bound tightly together by almost unseen cordage of byssus. The inexperienced dredger would cast



it from him into the sea, little suspecting that an unseemly mass of broken shells, to all appearance fastened together by chance, was the well-constructed lurking-place of so beautiful an animal. He would not suppose that there could be a habitable cave within; and would a creature, he might say, build a house without *ish* and *entry*?

On closer examination, however, it is found that this pagoda-looking building is really the habitation of the beautiful Lima—that the shells, though piled up, one might think, regardless of rule, are so arranged as to leave a snug receptacle in the centre for the ingenious architect, to which, by a concealed door, he can enter; and by which, if so inclined, he can issue out. Very wonderful are the works of God, and kindly does he teach even the feeblest of his creatures to consult for their own safety and welfare!

As about fifty species of mollusca were dredged on this occasion, we must name only the rarer ones. A few years ago, *Trochus millegranus* was a very rare shell, but during this excursion about eighty specimens of it were brought up. *Terebratula Caput-Serpentis* was also accounted very rare not long ago. In proof of its rarity, I may mention, that when my children were little things, amusing themselves by gathering shells on the shore, to encourage them in forming habits of observation, I used to bribe them, without, I trust, being guilty of corruption, by promising a penny for every species of shell that had not been brought me before. This made very minute objects quite visible, and great was my eldest daugh-

ter's joy, when, on bringing a very little shell one day, to her surprise I said, This is a very rare shell, and I think you are well entitled to sixpence for finding it. What a prize in the lottery! It was a very young *Terebratula Caput-Serpentis*, but it was the first that had been gathered on our Ayrshire shore. It has ceased to be rare, and therefore there was very little joy expressed by the dredgers, though several were on this occasion obtained. This *Terebratula*, as also *Terebratula Cranium*, were added to the British Fauna by my distinguished friend, Professor John Fleming, to whom natural science is so much indebted. The latter, *Terebratula*, is still very rare. I have a specimen of it, but not British. It had been dredged in Norway, attached to *Oculina Prolifera*, at that time not known as a British coral, but which has since been found by Dr Fleming in the north of Scotland; and I am glad to add, that, through the kindness of Mr Macmillan, of Ardtur, Appin, I have another fine specimen of it, dredged by fishermen off the island of Barra.

Had I the tongue of the learned, I might show much of the wisdom of God in the structure of the shell of the *Terebratula*, and also of the animal that inhabits it. It would lead us too far away were I to attempt even to abridge what has been written on the subject, so that I shall content myself with a word or two respecting the external appearance of the shell. It is a bivalve of a whitish colour, of a rounded, pentagonal, and somewhat egg-shaped figure. The upper and larger valve has its beak perforated, and it

adheres by this beak to other objects. A cluster of *Terebratula* is very interesting. The parrot-beaked *Terebratula* (now called *Hypothyris*) is very rare as a native, and has not yet been found in Scotland. But it is high time that we were returning to the enumeration of our dredged shells. There were got *Fusus gracilis*, a few of *Fusus Boothii* and of *Fusus Septangularis*; one *Tellina incarnata*; several of *Tellina Donacina*, one *Tellina Crassa*, and one or more of the following:—*Crania Norvegica*, *Pilidium Rubrum*, *Cardium fasciatum*, *Venerupis Virginica*, *Cyprina minima*, *Kellia suborbicularis*, *Psammobia florida*, *Natica Montagui*, *Dentalium entalis*, *Puncturella Noachina*, *Emarginula reticulata*, *Hiatella Arctica*, *Saxicava rugosa*, *Amphidesma pubescens*, *Cochlodesma prætenuis*, *Pecten tigrinus*, and *Pecten striatus*. It was on this occasion that Major Martin dredged the very beautiful specimen of the last-named shell, which we have already mentioned as measuring 11-12ths of an inch in length, and about as much in breadth. Many other shells were got of less rarity. Among the rarer, however, I should have mentioned one specimen of *Mactra elliptica*.

Lamlash Bay is not very rich in Crabs, yet some of them are worth mentioning; such as *Ebalia Pennantii*, *Ebalia Crauchii*, got by Major Martin at this time, and *Ebalia Bryerii*, got on another occasion by Dr Greville. The beautiful Velvet Crab is not rare in Lamlash Bay, nor *Porcellana Platychelis*. *Hyas coarctatus* was also dredged; and *Hyas araneus*, though common, is interesting; on account of the

appendages it generally carries along with it. I have seen it adorned with white feathery plumes of *Plumularia setacea*. Seaweeds, however, are a more common ornament, such as *Delesseria alata*, or *D. sinuosa*. Still more frequently have I seen it almost covered with a coating of sponge. Dr Johnston, in his interesting work on British Sponges, in giving the figure of *Halichondria oculata*, represents it as growing on the back of this crab. "The remarkable specimen," says he, "represented in our plate, was found in the Firth of Forth, by Dr P. W. MacLagan. It grows from the back of a small crab (*Hyas aranea*)—a burden apparently as disproportionate as was that of Atlas—and yet the creature has been seemingly little inconvenienced with its arboreous excrescence, for it was big with spawn, and in a state nearly ready for laying! Indeed, the protection and safety which the crab would derive from the sponge might more than compensate the hindrance thus opposed to its freedom and activity. When at rest, its prey might seek without suspicion the shelter afforded amid the thick branches of the sponge, and become easy captives; while, when in motion, scarce an enemy could recognise it under such a guise, and the boldest might be startled at the sight of such a monster.

‘Methought

The wood began to move.’”

*Pinnotheres pisum* also was dredged by Major Martin, and, though a very small crab, about the size of a pea, as the specific name implies, it has a kind of classical interest connected with a very large

shell—even *Pinna ingens* of *Montagu*, now again known by its older name, *Pinna pectinata* of *Linnaeus*. This *Pinna* is the largest bivalve inhabiting the British seas, being often a foot in length, and about seven inches in breadth. *Pinnæ* live in sand or mud, with their backs plunged deep in the ground, to which they are fixed so firmly “by a very large strong byssus, two or three inches in length, composed of numerous fine silky fibres, of a dark purplish brown, as to require the exercise of considerable force for their removal.” *Pinnæ* are more common in Sicily, where their strong silky byssus is made into gloves and stockings, and, as matters of curiosity, are disposed of at a higher price than if made of real silk. Both the *Pinna* and the *Pea Crab* were known to the ancients, and, as the little crab took up its abode in some spare nook, as it does still, of the *Pinna*, or of some other large bivalve, the story ran that the little crab repaid the protection and hospitality of its great friend and neighbour by unceasing vigilance, that it might give prompt notice to the less observant *Pinna* when prey was at hand; its watchfulness being, no doubt, quickened by the knowledge that it would be well rewarded by a share of the booty. *Oppian*, a Greek poet, who flourished about the end of the second century, and who, among other things, wrote in five books, what he calls his *Halieutics*, tells the story prettily, and it was done into verse in 1772, as follows:—

“ In clouded deeps below the *Pinna* hides,  
And through the silent paths obscurely glides;

A stupid wretch, and void of thoughtful care,  
He forms no bait, nor lays the tempting snare  
But the dull sluggard boasts a crab his friend,  
Whose busy eyes the coming prey attend;  
One room contains them, and the partners dwell  
Beneath the convex of one sloping shell;  
Deep in the watery vast, the comrades rove,  
And mutual interest binds their constant love;  
That wiser friend the lucky juncture tells,  
When in the gaping circuit of the shells  
Fish, wandering, enter; then the bearded guide  
Warns the dull mate, and pricks his tender side;  
He knows the hint, nor at the treatment grieves,  
But hugs the advantage, and the pain forgives;  
His closing shells the *Pinna* sudden joins,  
And 'twixt the pressing sides the prey confines.  
Thus fed by mutual aid, the friendly pair  
Divide their gains, and all the plunder share."

The *Pinna ingens* has only once, that I know of, been got near Arran. It is not at all uncommon in the Hebridean seas. It has more than once come to me from a friend in the island of Coll. What I prized it chiefly for was the rare zoophytes with which it was richly incrusted.\* There is much yet to be discovered in these Western seas in various branches of natural science.

Among other things that this story teaches us,

\* I lately saw at Exmouth, in the possession of a shell-dealer, to whom I was introduced by my kind, intelligent friend Mrs Gulson, a good specimen of *Pinna ingens*, dredged in that neighbourhood. Though scrubbed and oiled for the market, the byssus fortunately had not been touched. Mrs Gulson told me that some young ladies having brought her a *Pinna* found on the shore, and on her saying, "Had it not the byssus?" they answered, "Was that the tail? We tore off the ugly tail, and threw it away."

we may learn from it that wisdom is better than strength. Even the mouse may be of service to the lion. How happy, then, they who commit themselves to Him who is both wisdom and strength, who can protect us in danger, who can give us counsel and might, who can supply all our wants out of his abundant riches, who can establish the work of our hands, and cause all things to work together for our good !

This little crab is so common on the Irish coast, that Mr W. Thompson obtained fourteen of them by opening eighteen of the large *Modiola* or horse-mussel; and at Youghal Mr Ball found them so abundantly in the common cockle, that about nine out of every ten cockles contained a crab. But crabs used for food are, of course, much more sought after. *Cancer pagurus* is the one which, in our country, by way of eminence, is spoken of as *the* crab. In the west of Scotland it is known among boys by the name of *the Cruben*, a word of Gaelic extraction. It is generally taken by wicker-baskets like mouse-traps, and baited with portions of fish, &c. In the London market, crabs often weigh nine lbs. and upwards, which I think is greatly above the Scottish average.

Of the starfishes got at this time, the rarest were *Goniaster Templetoni* and *Uraster glacialis*. The vivid scarlet colour of the *Goniaster* causes it to attract attention the moment that it is turned out from the dredge. The *Urasters* were very large, fully twelve inches in diameter. They would, if properly prepared, have made first-rate specimens for a

museum; but happily for them, having a lurid, untempting look, they were turned back into the sea.

Fewer zoophytes than usual were obtained—only *Antennularia ramosa*, *Plumularia pinnata*, *Halecium halecinum*, *Lepralia annulata*, and others of more common occurrence.

The haul of seaweeds was richer; the rarest of which were, *Asperococcus Turneri*, *Delesseria ruscifolia*, *Callithamnion plumula*, *Stilophora Lyngbyei*, *Phyllophora Brodiaei*, and the beautiful *Sporochnus pedunculatus*, now got for the first time in the West by Major Martin, and soon after in great beauty by Mrs Balfour. Major Martin likewise got, for the first time in Scotland, *Cutleria multifida*, dearer to us because it bears the much respected name of our excellent friend, Miss Cutler.

After mentioning the starfishes that came in our way, it would have been more in order had we placed in juxtaposition with them *Amphidotus roseus*, *Echinocyamus pasillus*, and *Echinus sphæra*, common, indeed, but very large, and very beautiful, and, when carefully examined, very, very wonderful. Though we were happy in speedily restoring to the sea those pretty creatures that had been so suddenly and unceremoniously summoned into our presence, and which were very far, I am convinced, from courting further acquaintance with us, I must beg leave, now that their backs are turned upon us, to make our young friends better acquainted with *Echinus sphæra*. Had they still retained the name of *Echinus esculentus*, which, till lately, they bore, and could I have



recommended them as tid-bits for the table, I am convinced that they would not have thanked me for this certificate of character. We cannot deny that *Echinus esculentus*, which greatly resembles our *Echinus sphæra*, was not only regarded as eatable, as the name implies, but was accounted very delicious in ancient times, being dressed with vinegar, honied wine, parsley, and mint, and composed, as is recorded, the principal dish at the famous supper of Lentulus when he was made High Priest of Mars. Neither can it be denied that Pennant says that it is eaten by the poor in many parts of England; but we think we may safely deny that it is eaten even by the poor in any part of Scotland, and, had it been very good, surely some gasteronome would have made the discovery. It has not been made in vain, however, if it show forth to us the wisdom of the Lord. All his works praise him, and every spine even of this prickly sea-urchin is fitted to lead us to say of Him who made it, How wonderful is he in working! Every spine is a piece of beautiful workmanship, especially if a section of it is examined by the aid of the microscope; and the pattern is so distinct in every species, that the species can be determined by a single spine. And then the spine is not like the thorn of a shrub, an immovable process, for then it would not only have been much more apt to be broken, but would have been comparatively of little use; but it rests on a tubercle, on which it moves in the manner of a ball-and-socket joint, and it is kept in its position by a fine membrane, which invests

not only every spine, but the whole shell or integument of the animal. By the joint action of the spines and of retractile suckers, it can move from place to place in any direction, or moor itself to the surface of submarine rocks. It may be seen before the spines are removed, but still better when they are removed, that it is divided into ten compartments by five double rows of minute holes. From each pair of pores protudes a sucker, which is long, cylindric, and provided with a circular disk at its extremity, by which it can attach itself to any object, and can also climb perpendicular rocks. "The number of these suckers," says Professor Forbes, "is very great. In a moderate-sized urchin, I reckoned sixty-two rows of pores in each of the ten avenues. Now, as there are three pairs of pores in each row, their number multiplied by six and again by ten would give the great number of 3720 pores; but as each sucker occupies a pair of pores, the number of suckers would be half that amount, or 1860. The structure of the sea-urchin is not less complicated in other parts. There are above 300 plates of one kind, and nearly as many of another, all dovetailing together with the greatest nicety and regularity, bearing on their surfaces above 4000 spines, each spine perfect in itself, and of a complicated structure, and having a free movement in its socket. Truly the skill of the great Architect of nature is not less displayed in the construction of a sea-urchin than in the building up of a world!" Moreover, "the calcareous covering of the sea-urchin," says our intelligent friend, Mr

Paterson of Belfast, exhibits a singular and beautiful contrivance for the progressive growth of the animal. It is not one piece, as the word "shell," so commonly applied to it, would lead us to suppose. It is formed of a multitude of pentagonal pieces accurately fitted together, some rows of them bearing the tubercles to which the spines are attached, and others pierced with hundreds of minute orifices, through which the tubular suckers are protruded. A living membrane, analogous to that found in some of the Polyps, covers the entire surface, and dips down between the several plates. It has the power of depositing a calcareous secretion, which, being added to the edges of the plates, augments all in an equal ratio; and thus, whatever may be the size of the sea-urchin, the relative proportion of the several parts is uniformly maintained. It is impossible to contemplate the admirable mechanism of the spines, and suckers, and the elaborate structure of the shell, without at once feeling the conviction that in them we behold a portion of "the works of the Lord, and his wonders in the deep."

To say nothing of the multitude of the beautifully formed pincers, called *pedicellaria*, which are in constant motion on the surface of the coat, there remains much to be told, if space and time were granted, of the wonders of this prickly orb. We shall only briefly mention the admirable structure of the mouth, referring for a full description as given by Professor Jones in his "General Outline of the Animal Kingdom." The fine polished, pointed teeth that project from the mouth form part of an apparatus for

the prehension and mastication of food admirably fitted for these important purposes, and known by the fanciful name of Aristotle's lantern. In this lantern, besides the projecting teeth, there are strong grinding jaws, roughened like a millstone for the purpose, with muscular bands of great strength for regulating the motions of the jaws and teeth. The bony jaws and teeth form a conical body, about an inch and a half long, placed with its pointed end towards the great aperture at the base of the shell, and extending backwards into the body of the animal. "It is," says Professor Harvey, in his most interesting Seaside Book, "attached by strong muscles to five bony arches that surround the mouth of the shell, and several other sets of muscles serve to propel it forward, to cause it to retreat, to move the mass from side to side, or to cause the jaws to act one on another like pairs of millstones. The cone consists of five triangular pincers, or jaws hollowed out, with an opening down the centre in front, arched behind, and with the two sides flattened and finely grooved. In the hollow of the jaws is placed a large moveable tooth which plays up and down. When the cone is put together, the flat dressed surfaces of the five jaws, which stand round in a circle, are brought into contact. All the food that is received at the mouth must pass between these surfaces; and as there are systems of muscles which enable them to play up and down and across, a more perfect mill for grinding down the food cannot well be conceived." Any set of teeth fixed in sockets as ours are, would soon be

worn down by the sharp and constant practice to which the teeth of the sea-urchins are called in grinding down the shell-fish, and the bones of marine animals, on which the Echini feed. It is therefore wisely so ordered that there is, as in the case of the gnawing animals, a continual growth at the roots, where they are soft with a silky lustre, whereas at the points they have all the hardness of enamel. "Their jaws," Professor Rymer Jones says, "from their great complexity, and unique structure, form perhaps the most admirable masticating apparatus met with in the whole animal kingdom." The shelly integument of the sea-urchin is very commonly seen as a chimney-piece ornament even in the inland parts of the country, being brought as a curiosity from the shore by those who return from seabathing quarters. It is a pretty and curious object; but how few know that, when minutely examined, it is found to be constructed with such consummate ingenuity and skill, that man with all his boasted progress in the arts and sciences would not have the folly even to attempt to imitate this exquisite workmanship!

Sea-urchins of numerous species seem to have abounded in the ancient seas, as their fossil remains in our cabinets testify. *Echinocorys scutatus* is a species very often found in limestone rocks in the north of Ireland. We have a pretty little specimen of it, which we value more in consequence of the curious way in which it was obtained. We may say that it was dredged, but who was the dredger? It was a codfish. I got the fossil from my friend, Mr

Underwood, at Moneymore, who assured me that his cook got it in the stomach of a large cod purchased at Coleraine. Many shells, and crabs, and starfishes are found in the stomachs of cods and haddocks, but this was the only instance we have known of their dealing in the fossil line.

It is a by-rule of our club, that any friend of a kindred spirit, who may be disposed to join us in any of our excursions, is made a member of the club for the day. On this occasion, we had the pleasure of having two such friends with us. One of them was Mr Gray of Greenock, who had been spending a day or two in Arran, and who, after enjoying our dredging for some hours, by way of variety was landed on the Holy Isle, and before returning to us had climbed the hill, which is fully 1000 feet in height, and had enjoyed the charming view from the summit. The other was the Rev. A. Somerville of Glasgow, the worthy successor of Rev. Dr Love, Rev. Dr D. Macfarlane, and the Rev. Charles Brown. He has great pleasure in the book of nature, which proclaims its divine Author, but far greater pleasure in that nobler book which tells us of the wonders of God's love in the work of redemption through Jesus Christ his Son. To preach Christ Jesus and him crucified, is at once his duty and his delight; and not satisfied with labouring most zealously among the members of his own congregation, when he saw the multitudes who in the city of Glasgow are living without God, his spirit was stirred within him, leading him to be instant in season and out of

season, in the narrow lanes and in the open fields, striving to turn sinners from the error of their way. How great the wonders of the human voice ! so expressive of every feeling of the heart—now of pity—now of grief—now of affection—now of wrath—now of exalted devotion—now of seraphic fervour—as if feeling the kindlings of that holy flame which burns in the hearts of the worshippers around the throne. What an organ is the throat, that can be so powerfully played ! But Mr Somerville learned by experience that it can be overwrought : like some others, he found that his zeal made him forget that, however willing the spirit may be, there are bounds which the bodily organs cannot safely overpass. Beyond these he had often gone, and the consequence was an affection of the throat, which has occasionally deprived the church for a season of his valuable services. To give a little temporary ease to this overwrought organ, he was now residing in Arran ; and being otherwise in great good health, he could enjoy the present excursion. And there were others to enjoy it, though not members of the club. In another boat that kept pretty close by us, we had the pleasure of seeing Mrs Somerville and some of their fine boys, and her sister, Miss Ewing. The spirited boys, free for a little from the grammar school and full of glee, mightily enjoyed the sail in the loch, and joining us when the dredge was hauled, expressed with youthful ardour their wonder and delight at seeing the rich and curious mixture it contained.

When one of our party was put ashore to ascend,

as we have said, to the summit of the Holy Isle, we all availed ourselves of the opportunity afforded to land for a little. The only thing I shall mention as the result of our brief littoral researches is *Halichondria panicea*, growing on the under side of a shelving rock washed by the waves except at very low water. This species of sponge is not rare on our western shores. It is described as follows by my kind friend Dr Johnston, in his excellent "History of British Sponges":—"H. *panicea*, incrusting, amorphous, compact, cellular like crumb-of-bread interiorly, the surface minutely porous, even, or papillary; focal orifices large and scattered; spicula fusiform, slightly curved." He extends the description by saying that it forms an irregular, and often extensive crust, sometimes thin and at other times nearly an inch in thickness, of an orange-yellow colour, at times with a considerable mixture of green. It is rather firm, compressible, but not elastic, porous and cellular, and perforated with canals which open on the surface, either level with it, or elevated into large papillary processes, that are either separate or confluent, and each of which is terminated by a wide focal orifice. When broken longitudinally, the fibres of the sponge are observed to have an upright direction, connected by numerous cross threads formed by fasciculi of the spicula, which are very numerous, short, curved, fusiform, and pointed at both ends. I may mention, that the spicula which are here spoken of are little silicious needles, which abound in this and in many sponges, and by the shape of which the genera and species



are in some degree determined. You would not suppose, in looking at this soft sponge, that it contained so many sharp and flinty ingredients. Mischievous boys, however, on the seashore are not ignorant of this, and drying the sponge and reducing it to a powder, they ask their unwary friends to rub their hands with this fine white powder, and are greatly amused with the intolerable itching produced by the stinging of the little invisible needles. If you wish to see them for scientific purposes, you have only to burn a small portion of the sponge, and to examine by the aid of the microscope a little of the ashes, and you will find that the spicula abound. The foreign sponges which are in so general use among us are free from these needles. The *Turkey* sponges, which are the finest, are from the Mediterranean; the West Indian are chiefly from the Bahama Islands. We are told by Pomet that in the isle called Jearus young men are not allowed to marry till they are expert in gathering sponges from the bottom of the sea; and if any *bonnie lass* has many wooing at her, as we would say in Scotland, the competitors must strip and jump into the sea, and he who dives best and can stay longest in the water marries the maiden. According to Hasselquist, in another island the capabilities of the young maidens are put to the same test. "Himia is a little and almost unknown island, directly opposite Rhodes: we saw it in the morning on our right hand. It is worth notice on account of the singular methods the Greeks, inhabitants of the island, have to get their living. In the bottom of the

sea, the common sponge (*Spongia officinalis*) is found in abundance, and more than in any other place in the Mediterranean. The inhabitants make it a trade to fish up this sponge, by which they get a living far from contemptible, as their goods are always wanted by the Turks, who use an incredible number of sponges at their bathings and washings. A girl in this island is not permitted by her relations to marry, before she has brought up a certain quantity of sponges, and before she can give a proof of her agility, by taking them up from a certain depth." There, the young woman must give proof that she can be a helpmate for her husband. At Fisherrow, near Musselburgh, where the fishermen's wives require both strength and agility to go to Edinburgh every day with a good creelful of "caller haddies," &c., on their back, in their own opinion something more than parity is requisite. "Her marry!" exclaims Janet, scornfully, "Her marry, silly taupie! she's no fit to keep a man."

In the days of Homer, sponges were employed in promoting cleanliness as now, and we doubt not long before Priam reigned or Homer sang; but, so far as we know, Aristotle, the preceptor of Alexander the Great, himself as renowned as his ambitious and warlike sovereign, was the first to treat of them scientifically; and it is curious to see that their rank in the scale of nature was an unsettled point then as it still continues to the present day. Aristotle in one place speaks of them as animals, but in another part of his works he speaks of them as plants, or

rather as holding a place intermediate betwixt animals and plants. “The sponge,” says Aristotle, “is a stationary or rooted animal, and seems to have some sensation, for they report that it is torn away with difficulty, unless the attempt be made without warning;” or, as he words it in another place, “if the sponge perceives a person about to pull it off, it contracts itself, and is difficult to be taken away, and it does the same when there is much wind and sea, in order that it may not be uprooted; but there are some persons who doubt of this, as the inhabitants of Torone.” In another part, however, of his works, he asserts that sponges are without sensation, and have altogether the character of a plant; or rather, on the whole, he may be considered as regarding them as intermediate betwixt animals and plants.\* Ray rejects what is said by the ancients of the life of sponges, and regards them as marine vegetables. Linnæus ranked them among the cryptogamous algæ. Ellis was at first inclined to think that, like other zoophytes, sponges would be found to be polypiferous, and the polypi, or “animals of a particular class,” were to be sought for in the orifices which open on the surface, or in the tubular fibre, which, by its inosculations, forms the complicated reticulation of the whole mass. But his mature opinion was, that the sponge is an animal *sui generis*, very torpid, growing in a variety of forms, composed either of reticulated fibres, or masses of spines interwoven together, which are clothed with a living gelatinous flesh full of

\* Dr Johnston's British Sponges.

small mouths or holes on the surface, by which it sucks in and throws out the water. Montagu, in his Essay on Sponges, says, that the true character of a sponge is that of a living inactive gelatinous flesh, supported by innumerable cartilaginous or corneous fibres or spicula, with external pores that convey the water to every part of the body, and that the oxygen in the water is the principal part of their nourishment, so that the sponge is entitled to the name of *sea-lungs*.

Dr R. E. Grant threw great light on the nature of sponges. He was led to regard them as animal—"inferior to the polypus in the system, but superior to the polygastric or infusory animals." His experiments are so interesting, that we must quote some of them. "Having put a small branch of the *Spongia coalita* with some seawater into a watch-glass, under the microscope," says Dr Grant, "on moving the watch-glass so as to bring one of the apertures on the side of the sponge fully into view, I beheld for the first time the splendid spectacle of this living fountain vomiting forth from a circular cavity an impetuous torrent of liquid matter, and hurling along, in rapid succession, opaque masses, which it strewed every where around. The beauty and novelty of such a scene in the animal kingdom long arrested my attention; but, after twenty-five minutes of constant observation, I was obliged to withdraw my eye from fatigue, without having seen the torrent for one instant change its deviation, or diminish, in the slightest degree, the rapidity of its course." As not

every one has a microscope at hand, it is well that Dr Grant tells us how these currents may be seen by the naked eye, and his experiment was made with a sponge that can be got on all places of the sea-coast, and the very one that led us to speak of sponges. "The *Spongia* or *Halichondria panicea* presents the strongest current which I have yet seen, and has the greatest thickness of body of any spreading sponge which I have met with on the rocks of this part of the Frith of Forth. Two entire round portions of this sponge were placed together in a glass of sea-water with their orifices opposite to each other at the distance of two inches; they appeared to the naked eye like two living batteries, and soon covered each other with feculent matter. I placed one of them in a shallow vessel, and just covered its surface and highest orifice with water. On strewing some powdered chalk on the surface of the water, the currents were visible at a great distance; and on placing some small pieces of cork, or of dry paper, over the apertures, I could perceive them moving by the force of the currents at the distance of ten feet from the table on which the specimen rested."

Did it not carry us too far, we would like to give at some length the conclusions come to by Dr Johnston, of whose interesting works we have already made much use. On examining the freshwater green *Spongilla*, few, he says, would hesitate to pronounce it a vegetable; and even in passing to the examination of the calcareous and siliceous, however genuine, the impression is not so much weakened but that he can

still say, with Professor Owen, "that if a line could be drawn between the animal and vegetable kingdoms, the sponges would be placed on the vegetable side of the line." But Dr Johnston adds, "We shall possibly, however, arrive at an opposite conclusion, if, proceeding in our inquiry, we follow the siliceous species, insensibly gliding, on the one hand, into the fibro-corneous sponge, filled with its mucilaginous fishy slime; and, on the other, into the fleshy *Tethya*, in whose oscula the first signs of an obscure irritability show themselves. Sponges, therefore, appear to be true zoophytes; and it imparts additional interest to their study to consider them, as they probably are, the first matrix and cradle of organic life, and exhibiting before us the lowest organization compatible with its existence." Since I wrote this, *cilia*, I have been told, have been discovered in active motion in sponges by Mr Bowerbank.

The only other sponge I shall mention as being also dredged by us, is *Halichondria suberea*. To a young naturalist this a very puzzling article. It completely covers univalve shells, forming a kind of half-cloth half-corky investment. When I first found it, on the coast of Ayrshire many years ago, I was quite at a loss to conjecture what it was. It had so covered *Nasa reticulata*, that not a speck of the shell was visible, and it had contracted also the size of the mouth. It was a shell in shape but not at all in substance. I sent it to several naturalists of note, but natural history, in its various departments, was much less generally studied then, and it come back to me with

many conjectures attached, but all of them very wide of the mark. I then sent it to my good friend Dr John Fleming, who was greatly amused with the learned conjectures. He was quite familiar with it, and he sent it back correctly named. It is curious that the shell thus clothed is very generally chosen as the cell of the hermit crab, which must be more social than hermits are in general, for if not found in partnership with the sponge, it is almost sure to be a fellow-lodger with the pretty-spotted *Aetinea*, though it acts like the Irishman who, in dividing the house with his wife, generously gave her all the outside, keeping only the inside to himself.

Among the shells dredged, there was a *Natica glaucina*, which, as its mouth was shut up with an artificial plaster-work, I placed, on reaching home, in a tumbler of seawater, to see whether any thing would be forthcoming. I had not watched it long till I saw protruded from a little hole in the plaster operculum, something like a white worm, which, having made a speedy voyage of discovery, withdrew into its hiding-place. I found that it was a *Sipunculus* nearly allied to the one figured and named by Professor Edward Forbes as *Sipunculus Bernhardus*. "This curious animal," he says, "adopts the shells of dead univalve testacea for a house and home, after the manner of the hermit crab. It would appear, however, to be of a less changeable disposition of mind and body than its crustacean analogue, and when once securely housed in a shell, makes that its permanent habitation. The *Sipunculus* is not, however, content

with the habitation built for it by its molluscan predecessor ; it exercises its own architectural ingenuity, and secures the entrance of its shell by a plaster-work of sand, leaving a round hole in the centre, sufficiently large to admit of the protrusion of its trunk, which it sends out to a great length, and moves about in all directions with great facility. The trunk is long and cylindrical, and slightly enlarged at its extremity, where it is surrounded by about twenty tentacula, which are very seldom protruded. The trunk can be entirely retracted within the body," which, we may add, lies concealed in the shell inside of the plaster-work. I was much interested in watching the movements of this marine hermit. It evidently sent out its trunk to forage, making a *raid* at regular intervals, so as to accomplish about five every minute. In protruding its trunk, it seemed to plough like a little pig among the mud deposited at the bottom of the tumbler, the head at that time being no thicker than the linear body of the trunk, but having gone the whole length of its tether, about  $1\frac{1}{2}$  inches, it elevated the trunk in the way that the proboscis of the elephant is sometimes figured, and when thus uplifted, the head became swelled to double the thickness, the mouth seemed opened and the tentacula spread out, as if it had been swallowing all that it had got or could get. This being over, the head was reduced to the same thickness as the trunk, and the whole was retracted within the shell. In a very little, the trunk was again protruded, and it continued to repeat the same process, for a long time, seeming to enjoy the work. I had



intended to cast it back into the sea, but finding that it was dead next morning, I broke the shell, and found that the body of the animal was more than double the thickness of the trunk, which had now disappeared, being withdrawn like the horns of a snail.

We suspect that many of our readers will now be ready to say, "enough is as good as a feast," and will be well pleased to hear, that as Lamash was now near at hand, we made the best of our way to Seafield, where dinner had been provided for the assembled club by Mr and Mrs Barbour, in whose hospitable house having spent the night, I next day returned to Ayrshire.

We have now come to the last excursion to Arran in which I bore any part. My good friends, Mr Keddie and Mr Connel from Glasgow, having arranged to meet for a day's dredging with Professor Balfour from Edinburgh, who had been residing during some of the summer months at Seafield, near Lamash, we all met by railway on the quay at Ardrossan, along with Major Martin, who was to be of the party; but before we start in the steamer, the time will not be lost if we turn our attention for a little to some interesting workers in wood, residing in the harbour, and who are most indefatigable in their labours, though they are far from getting thanks from any of the proprietors. I refer to *Xylophagists* of four descriptions, two of them molluscous, and two of them crustaceous, who, by boring into the wood-works, in process of time destroy whatever they assail. In particular, it was lately found that they had so

thoroughly damaged the dock-gates of the harbour, that it was necessary to remove them, and put new ones in their place. These diligent workers in wood are *Teredo Norvegica*, *Xylophaga dorsalis*, and two little voracious crustaceans, *Limnoria Terbrans*, and *Chelura Terbrans*. Major Martin, who resides at Ardrossan, was not blind to these depredations; and though he could not stop the proceedings of the borers, he did what was next best, he took a note of their work, and procured for himself and his friends some of the finest specimens I ever saw of the damaged wood, with the depredators *in situ* arrested in the very act. I had specimens of all the four, but mine were all in drift wood, and not nearly so fine as those got by the Major in the dock-gates. Mr W. Thompson, of Belfast, whose eye, and mind, and pen, are ever actively employed, had written a memoir respecting the depredations of some of these creatures at Portpatrick and Donaghadee, on receiving a specimen from Major Martin, which led to a correspondence, wrote another memoir on the subject, and as he kindly sent me a copy of it, I shall freely avail myself of it. "Early in the month of May last, Major Martin, of Ardrossan, in Ayrshire, a gentleman well known as a lover of natural history, and as a successful collector of objects of zoological and botanical interest, sent me a piece of wood bored by the *Xylophaga dorsalis*, and labelled as from the dock-gates, Ardrossan. Not having before heard of this animal attacking the fixed timber of our harbours—it has been found in drift wood, or portions of vessels cast ashore—I made

immediate inquiry respecting it, suggesting, at the same time, that the *Teredo* should be looked for, and also that the outside of the timber should be examined for very minute borings; if such were observed, I requested to be informed whether they were of more than one size. Specimens of wood excavated by the *Limnoria* and *Chelura* were forwarded by post for my friend's guidance. I shall here give his replies to queries on the subject generally. The piece of wood sent was a portion of the dock-gates. The *Xylophaga* has been known to be consuming them since the docks were opened in 1844. It has been known for a very considerable time along this coast, where there is no fresh water. It attacks timber of all kinds; for instance, the wooden pier (the supporters of which are nearly destroyed) and other timbers that were under water about the quays, and have been placed there without any preserving coating. It appears to prefer black birch to any other timber. The red pine is the favourite timber of the crustaceans. On inspecting the pier, Major Martin could not observe that the *Xylophaga* had committed any destruction, but saw that the *Teredo* had been at work in some places. He cut off a piece of the wood from the outside, and sent it to me. It contained, in addition to the furrows of the *Teredo*, living specimens of both *Limnoria* and *Chelura*. This pier has been about eight years existing. I was also sent a portion of one of the dock-gates, consisting of a piece of pine, of two inches in thickness, and within the space of a few square inches containing the excavations of the

whole four species. It may give some idea of the frequency of the *Xylophaga*'s perforating in the different pieces of wood to mention, that on an average at least one-half is occupied by its burrows."

When Professor Forbes was about to publish that part of his "*British Mollusca*," in which the *Xylophaga* is figured and described, he wrote to me, wishing that I could send him a living specimen. It so happened that, very soon after, I picked up a floating fragment of the branch of a tree full of living *Xylophagæ*. Some of them I put into seawater, and had the pleasure of seeing their form and habits, and others of them I sent to the Professor. In his excellent work he afterwards said,—“The animal of our British species, according to a note kindly communicated by the Rev. D. Landsborough, is, with the exception of the siphons, entirely included within the shell. The foot is large, and pillar-shaped; its extremity tinged with buff. It occupies the greater part of the anterior opening, and may be protruded to some length. The margin of the mantle around it appears to be plicated. The rest of the animal is white. The siphons are very extensible; sometimes assuming a length of three quarters of an inch, more usually resting at about the third of those dimensions.” The shell in which this animal lodges is a beautiful structure. It is white, globular, composed of two equal much-carved valves, their outer surface in part smooth, in part striated and ornamented; the inner is strengthened by a strong rib running from the back to the central margin. It has no tube, but two ac-

cessory plates of pretty workmanship. The texture of the shell is very fragile. A full-sized one is about as large as one of the largest of our garden peas. It is a curious spectacle, when a portion of the fresh plank is split up, to see how completely it is occupied by these creatures in their finely-rounded cells, and we wonder how in their fragile shells they could so nicely carve out their abodes in the firm wood. The chambers run across the wood sometimes  $1\frac{1}{2}$  inches before they terminate in a rounded form. Mr Thompson says, "The shells of my largest specimens are  $5\frac{1}{2}$  lines in length; the two valves joined at the hinge occupy a space of  $5\frac{1}{2}$  lines in diameter."

In the same plank, however, of the dock-gates at Ardrossan, we have, along with the *Xylophaga*, *Teredo Natalis* of Turton, which is now found to be the *Teredo Norvegica* of Spengler. They work harmoniously together, the *Xylophaga* boring across the grain, and the *Teredo* longitudinally in the direction of the grain, and taking good care not to interfere with each other. Were we to show only the head or shell of the *Teredo* to an unpractised observer, it would appear the same as the shell of the *Xylophaga*. The scientific eye, however, can see much difference. But, though we were to overlook the difference in the shape and striating of the shells, and also the want of accessory valves in the *Teredo*, compensated by its having, at the part where the siphons divide, little calcareous bodies called *pallets*, we cannot fail to observe this striking difference in the *Teredo*, that the body of the animal is lodged in

a strong calcareous longitudinal tube. These tubes are not often seen more than a foot in length, but Mr W. Thompson mentions that at Portpatrick they have in some cases attained the extraordinary length of nearly  $2\frac{1}{2}$  feet. The greatest diameter at the larger end, is 7-8ths of an inch; at the smaller, from  $1\frac{1}{2}$  to 2 lines. In these cases, the valves of the shells were large in proportion, being three-quarters of an inch in diameter. The largest tubes I ever met with were found by me in a quarry at Content, near Ayr. They were in beams of timber like masts of vessels, which, though still pretty firm, must have been buried there above twenty feet underneath the present surface, during some great convulsion, which must have taken place before a house of the town of Ayr was built, and at a period to which the history of Ayrshire does not extend.

The *Teredo* is a most formidable creature. So great is its power of destruction, that Mr Thompson mentions that a piece of pine wood, nine inches in diameter, after having been employed as a pile for five years and a-half, was so reduced by the perforations as to contain not more than an inch of solid timber in any part, and in several parts was completely bored through. Montagu mentions that sound piles will be found completely perforated by *Teredines* after four or five years' submergence. Well may it be styled by Linnæus "*calamitas navium*." It is this that renders the copper-sheathing of ships so necessary.

I shall give but a very short notice of the two

crustacean borers found diligently at work at Ardrossan. They both work from the surface *inwards*. In process of time, the surface is so perforated by them that it crumbles down, leaving a new surface for them to operate upon, which in due time yields to the persevering little borers. Dr Coldstream, in his excellent paper in the "Edinburgh Philosophical Journal," informs us that "*Limnoria* often effects a lodgment in piles very near highwater-mark, where it is left dry by the receding tide, during the greater part of twenty-four hours," so that it can carry on its work in wood left dry by every ebbing tide. And so can the *Chelura*, for we have seen it snugly lodged in timber on the pier at Ardrossan far above lowwater-mark. Both these creatures are but small, though they can do much mischief. They can easily be distinguished from each other, not only by the difference of form, but also of colour, the *Chelura* being red, and the *Limnoria* grey.

Were these tribes of borers created merely to humble the pride of man, and to show him that while worms are to feed on his body in the grave, there are other kinds of worms which, unseen by him, can destroy his proudest works? Truly we may learn lessons from the very worms, and, if they teach us humility, it is a good lesson; but, when we become better acquainted with their operations, they may teach us to bless God that they were created. Their boring propensities, when directed against man's works, are hurtful to him; but God has given them these tendencies, not against man on the whole, but greatly in

his favour. We see little of their works; did we know them all we would say, What immense service they are doing to man! They hasten greatly the progress of decay of those substances, which, were they to continue to float in the sea, would prove great incumbrances, and would work much damage to man. Were it not for the incessant operations of their gnawing teeth, all the drift-wood, the wrecks of vessels, the timber and trees swept and torn from the banks of rivers, would remain entire for many years, and if floating, would be injurious to navigation, or, if sunk at the mouths of rivers, would soon choke them up, and form an insurmountable bar to the entrance of vessels, and would probably spread the obstructed waters over much of the adjoining country, converting into unwholesome marshes what would otherwise have been fertile and productive lands; so that they were evidently made, not to be the enemies but the friends of man, though friends that require watching, and to be kept as much as possible from entering our harbours, and visiting our ships. When restricted in their operations so as to be kept within their own province, their services are invaluable.

I fear that I have kept my readers too long on the pier at Ardrossan. We shall now request them to go aboard the steamer, and whilst they are crossing to Lamlash, we shall beg leave to hold converse with them for a little respecting another kind of borers found in the shale there at low-water. When I lately visited Mr Brown of Lanfine, at his delightful residence, near Loudoun, where he has the richest pri-



vate cabinet I have seen, especially in the mineralogical department, he showed me, as his most recent acquisition, a large portion of shale from Lamlash, in which about half-a-dozen of *Pholas crispata* had effected a permanent lodgment, and the rock, instead of being cut transversely so as to show only the mouths of the bores, had the perforations uncovered so as to give a longitudinal section of them, and to show the *pholades* lying *in situ*. It was a specimen well worth looking at, even amidst the rich stores of his noble museum. We had before seen specimens of the same from Lamlash, but not at all equal to this. *P. crispata* is more common in Scotland than in England. It is the stoutest of the tribe. We would call it a bivalve were it not for the little accessory plate. It is of an oval shape, much inflated, gaping greatly at both ends. The surface is nearly equally divided by an oblique groove-like channel. The colour of the shell, as also of the animal, is whitish. A full-grown specimen is about three inches in length, by about three-quarters in breadth.

How do these boring mollusca excavate their dwelling-places in wood and stone and other materials? This is a question that has long been discussed, but naturalists are not yet quite agreed as to the answer that should be given. Many interesting papers have been written on the subject, but it would carry us too far away to state all the opinions that have been formed. A few of them may be mentioned. Reaumur gives it as his opinion that the *Pholas candidus*, for instance, bores in clay, making

use of its foot to bury itself; and that when it is found in stone, this stone is the clay which has hardened round the animal after the perforation was made. Mr John Edward Gray holds that many of this tribe bore into calcareous rocks by dissolving them. Dr Fleming's opinion seems to be, that the perforation is performed by the animal rasping by a rotatory motion the substance into which it bores. Mr Garner states it as his opinion that the pholades bore by rasping. Mr W. Thompson expresses his belief that a solvent supplied by the proboscis acts as pioneer in beginning the perforation, which is afterwards increased by boring. M.M. Deshayes and Caillaud think that the *Teredo* secretes an acrid solvent, which causes the wood easily to crumble away. M. Necker says it is remarkable that some of the boring shells radiate calc-spar; but now we know that the shells are composed of arragonite, so that they can act on the hardest limestone. The remarks of Sir H. de la Beche somewhat confirms this. Mr Albany Hancock states that the excavating instrument of *Pholas* and *Teredo* is formed of the anterior portion of the animal, in the surface of which are embedded siliceous particles. The particles penetrating the skin, gives it much the character of rasping paper. All these theories will be found at greater length in Forbes' British Mollusca, with his own remarks upon them.

We had now at last reached Brodick Bay, and skirting along southwards, we reached the mouth of Lamlash loch. As we had a considerable breeze

in crossing, we were afraid that it might be too windy for dredging. We were glad, however, to see two boats awaiting us, and to receive the cordial hail of Professor Balfour. Mr Connel, Mr Keddie, and I, went into his boat, and the other was taken possession of by Major Martin who had previously bespoken it. We had a very pleasant day of it, notwithstanding some things that were rather unfavourable to success. Owing to some disappointment, we had not boatmen accustomed to the work. They were very willing, but it was the first time they had been out with amateur-dredgers. The younger one was a remarkably clever boy, and we all predicted that he would turn out a first-rate seaman. Their boat was rather small for the party, which, including the boatmen, consisted of seven, and though the more the merrier, we had rather little elbow-room for dredging work. Moreover the dredge which the men had was a common oyster-dredge, so that while it kept in every thing as large as a hen's egg, it allowed to escape through the meshes whatever was of minuter size. The day besides was too breezy, and the motion of the boat made some of the party at times assume a very rueful look. The Professor himself, however, was so joyous as to keep all the rest of us alive. The dredge also, in spite of its defects, brought up from time to time things that were new to the greater part of us. *Luidia fragillissima* was the first prize, and many a naturalist would have thought the day a successful one though nothing more had been got, especially as it came to us with not more than one broken leg. A

fine *Asterias aurantiaca*, and several large specimens of *Uraster glacialis*, were inclosed in the dredge. As we happened to come on their lobster-grounds, the fishermen embraced the opportunity of hauling up some of their lobster-creels. Only one lobster was found entrapped (*Homarus vulgaris*), and though of tolerable size, it was a perfect shrimp compared with a specimen of the thorny-lobster (*Palinurus vulgaris*) in Major Martin's cabinet, got near Campbeltown, measuring (including the *horns*) no less than two feet three inches.

The common lobster is so well known, that it is unnecessary to describe it. Even children in the inland part of the country, ere they have seen the sea, have generally possessed a lobster claw as one of their playthings. The children, however, do not know that the pretty scarlet claw was of a purplish-black colour till it was put into boiling water. It is well that they are very prolific, for the number sent to market, especially London, annually from Scotland, from Yorkshire, and from Norway, is prodigious—so great, indeed, that we would suppose that the sea would soon be thinned of them, were it not that Dr Baxter says he counted 12,444 eggs under the tail of one female, besides those that remained in the body unprotruded. Lobsters change their crust every year, and are quite sick for some days before they cast their old coat, and quite defenceless for a short time after it is cast off, during which period they hide themselves in holes, otherwise they would be eaten up by enemies even of their own kind. In the water they

can run nimbly, and can spring tail foremost thirty feet at a bound, as fast as a bird can fly.

While the fishermen looked for lobsters in the pots, we kept as good a look out for what they would have accounted trash, and we were rewarded by getting from the wicker work of their creels some good seaweeds. Some rare ones also were brought up by the dredge. A large specimen of *Dictyota dichotoma* we observed studded as with fruit, but on after examination it proved to be *Elachistea stellulata*, a very rare though a diminutive parasite, which had never been observed any where before except by Mrs Griffiths on *Dictyota* at Torbay. It is far from being rare in Lamlash Bay. We got many specimens, and could have secured many more, had we been aware at the time that it was a rarity. Major Martin in the other boat was no less successful in obtaining it, though looking as little for it as we were. *Halymenia ligulata* was also got, which is a rare plant in Scotland, though less rare than was lately imagined.

We should have had the pleasure of having Mrs Balfour along with us, but I suppose she thought that the boat had its full complement, and we could only hail her as she passed along the shore with some of her household towards Clachland point, near which she had the felicity of adding a fine plant to the Flora of Scotland, even *Ginannia furcellata*. She got it growing on the rocks a little beyond lowwater-mark. She dredged it also in deep water. She moreover dredged *Polysiphonia subulifera*, new likewise to Scotland; and the beautiful *Dudresnaia coccinea*,

which (with the exception of two *bittocks* already mentioned) had never been got in Scotland; and *Sporochnus pedunculatus*, one of the loveliest of our algæ, especially when adorned, as some of her fine specimens were, with their sweet green tufts. She succeeded also in making fine preparations of the Rosy Feather-star, and it requires considerable skill and dexterity to preserve it entire and in good colour. We are truly glad that our Scottish ladies are coming into the marine field, to compete with their fair sisters in England and Ireland, who in this interesting department of natural science have won for themselves an imperishable name.

But where was Major Martin all this while? Crossing and recrossing us before the breeze, as intent on the work as it was possible to be. He had the best boat and the best dredge, and he continued three days at the work, so that he came home enriched with booty; and as I am allowed to share in the spoil, I allege that his cabinet is the best dredging ground I meet with. He got some rare shells, and some rare seaweeds. *Sporochnus pedunculatus* he had got on a former occasion, when it was new in the West, and now he dredged a number of fine specimens; and he was greatly pleased in again dredging *Cutleria multifida*, dedicated, as we have said, by Mr Dawson Turner, to our respected friend Miss Cutler of Budleigh, Salterton.\*

My limited hours, however, had come to a close.

\* He got also, as I did likewise, *Ginnania furcellata*, but we did not detect it among our stores till some months afterwards.

My two friends, Mr Connel and Mr Keddie, had to return by the steamer, which had now reached us. On going aboard, I had the pleasure of being introduced to Mr Babbington, the distinguished English botanist; but the passage was too stormy to allow me to profit much by the privilege. My two excellent friends remained with me till next day, and we spent a happy night together in the manse, after bringing the excursions of the year to a close, thankful for all the happiness that we had been permitted to enjoy.

*July 13, 1850.*





# EXCURSIONS TO ARRAN.

## PART I.

### CHAPTER I.

#### HISTORICAL INTRODUCTION.

Arran visited by few till steamers began to ply—Where situated—Origin of name—Extent—Height of mountains—Its ancient history obscure—Traditions respecting Fingal—First inhabited, it may be, by Caledonii, then by Picts, then by Scots—Fell under the power of the Norwegians, and remained long under their power—Alexander III. of Scotland claims the Hebrides—Haco, King of Norway, withstanding him, is discomfited at Largs—His successor cedes the islands to Alexander, who was to pay a yearly sum—Much under the power of the Lord of the Isles—Finally ceded, free from annual payment, by Christiern, when his daughter was married to James III. of Scotland—During the reign of Edward I. of England, Arran fell under the power of the English—Wrested from them by Bruce—Became a favourite hunting residence of the Kings of Scotland—Created into an earldom, and given as a portion of the sister of James III., when given in marriage to Sir T. Boyd—As she was afterwards married to Lord Hamilton, the greater part of the island became the property of that noble family, and continues in the family of the Duke of Hamilton till the present day.

Religious history—At first, it is probable, the religion Druidical—Then it may be the Scandinavian mythology would be introduced—Visited with Gospel light from Iona—Overclouded by

Popish superstition—Partook, it is probable, of the benefits of the Reformation—Sunk into deadness—A revival took place early in the present century.

THOUGH the island of Arran must ever have been a conspicuous object from the mainland, it is not till lately that it was much visited. A few families from Ayrshire were in the habit of spending part of the summer in it some forty or fifty years ago, and they always spoke of it with much delight. A jaunt to Arran then was considered as an adventure, and those who accomplished it, spoke of the trip as we would now do of one to France. The vessel they sailed in was generally an open boat, and not unfrequently an old blanket played the part of a sail. When the weather was calm, a night and a day on the deep was no unfrequent period of passage; and when the weather proved stormy, and frequent tackings were necessary, it has been known to extend to more than twice that time. Arran is about thirteen miles from Ardrossan, eight from Bute, and six from Kintyre. It is situated in the mouth of the Firth of Clyde, and ranks as one of the Western Hebrides. It is difficult in general to trace the origin of names, and it is amusing to see how Gaelic words can be twisted, so as to suit any theory which the writer thinks fit to adopt. It has been thought that Arran takes its name from two Gaelic words—*Ar*, high, and *Inn*, island; and it is the more likely that this is the true derivation, as in the ancient British, which is a cognate language, Arran signifies *a land of mountains*. It is of considerable extent, containing about 100,000 acres, form-

ing part of the county of Bute. It is generally said to be twenty-four miles in length, by ten or twelve in breadth; but it is probable that a *bittock* may be added to both these numbers. Its southern extremity is in latitude  $55^{\circ} 29' 30''$ , and in longitude  $4^{\circ} 17'$ . It may be considered as divided into two parts of different characters. All south of the road called the *String*, betwixt Brodick and Shiskan, consists either of hills averaging about 800 feet in height, or of good arable land, which is chiefly on the west side. All north of this road is a mass of magnificent mountains, in the centre of which is *Goatfell* (the *hill of the winds*), almost 3,000 feet in height.

We naturally wish to know the ancient history of any country or district in which we are interested. The ancient history of Arran is wrapped in great obscurity. It rests on tradition, and goes no further back than the days of Fingal; that is, *Phiun* the *Gael*, the son of Macoul. If we trust tradition, Fingal had been much in Arran, and among other traces, has left his name stamped on one of its bold eminences—*Dunphiun*; that is, the fort or hill of *Fiun* or Fingal. From the cairns, columns, stone coffins, clay urns, and Druidical circles, there is reason to think that Arran was inhabited by the ancient Britons, who have left similar traces behind them in other parts of the land. Afterwards it would appear that the Highlands and islands in general were inhabited first by the Caledonii, and subsequently by the Piets. According to some, certain wandering tribes called Scots, came from Ireland during the sixth century, and effecting a settlement,

and extending their dominion over the mainland and the islands, gave to our beloved country the name of Scotland, which it still retains. In the ninth century, Harold Harford, king of Norway, having subdued Shetland and Orkney, added to his dominions all the islands, even so far south as the Isle of Man; so that Arran then, if not sooner, came under Scandinavian sway. In the beginning of the tenth century Harold conferred the government of all his conquests on Sigurd the elder, whom he created Earl of Orkney. In process of time the Earls of Orkney ruled over not only Orkney and Shetland, but all the islands as far as the Isle of Man, as well as extensive territories in Inverness-shire, Argyle-shire, and even in Ireland; and being possessed of great courage and much nautical skill, they became formidable to the greatest princes. Through family feuds, however, their power was gradually weakened; and taking advantage of this, Alexander III., in the thirteenth century, claimed all the Hebrides as an appendage of the Scottish crown, which had been unjustly wrested from his predecessors. This gave rise to a war betwixt him and Haco, king of Norway. Haco assembled his forces in the Island of Arran in 1256, and sailing to Ayrshire, laid the country waste by fire and sword. His fleet sailing up the Clyde, lay at Largs. Alexander met his forces encumbered with spoil near Kilbirnie, and a battle ensuing, the Norwegians were discomfited, and pursued with great slaughter to Largs. Their progress can still be traced by the names of the places where anything remarkable took place in their

disastrous retreat to their ships. Great slaughter seems to have taken place at Broomfields, where so many elegant villas are now built; and even to this day portions of ancient armour are occasionally dug up in the peaceful garden grounds. The conflict seems to have been bloody; the Norwegians, naturally brave, being rendered more fierce by desperation. Torfœus, who was present, claims the victory for the Norwegians; but the event shows that they were defeated. To add to Haco's calamities, the elements declared against him; his fleet was dispersed in a storm, and returning to Kirkwall in Orkney, with the shattered remains of his forces, he there died of a broken heart. His successor being persuaded of his inability to defend the Hebrides against the enterprises of Alexander, ceded them to him in 1266, on condition of his paying the annual sum of a hundred marks. This is what our historians call the "Annual of Norway," which, though often claimed, seems to have been paid very irregularly, if paid at all. By this treaty Arran and the other isles were conjoined to the kingdom of Scotland, after being in a state of disjunction under foreign sway for nearly 400 years. But Alexander's sway was rather nominal than real; for the Macdonnells, the Lords of the Isles, were long the real rulers. They often made war on the kings of Scotland, and treaties of alliance with their enemies. When Edward I. advanced his claim to the crown of Scotland, he regarded it as good policy to attach the Lord of the Isles to his interest, by giving him his sister in marriage. Though the power of the

Lords of the Isles was gradually lessened, the islands were not reduced to complete subjection to the Scottish crown till the reign of James V. Even after this the Norwegians retained a claim on them; but Christiern, king of Norway, Sweden, and Denmark, gave up all claim, and gave also the islands of Orkney and Shetland as a portion with his daughter Margaret, when married to James III. of Scotland in 1469; thus amicably and finally annexing the whole of these islands to the Scottish dominions.

During the wars which were occasioned by the attempts of Edward I. to annex Scotland to his English dominions, the Island of Arran fell into the hands of the English, who, in 1306, held the Castle of Brodick under Sir J. Hastings. Bruce seems to have been successful in wresting it from the English in 1306. After passing a solitary winter in Rachrin, in the north of Ireland, he sallied forth in spring from his hiding-place to make another great effort for his crown and kingdom. His followers were few, but faithful; and the royal fleet which wafted them from Ireland to Arran, consisted, it is said, of thirty-three row-boats. He is supposed to have landed on the west of Arran, and to have resided for some time in a natural cave on the rocky shore, in remembrance of this, still called *King's Core*, and to have subsisted by fishing and hunting, with such supplies as those of the natives who were friendly could furnish. For services rendered then, and afterwards, several of the natives received from him, in reward, grants of land. Mr. Fullerton of Kilmichael is the lineal descendant

of one of those thus rewarded, and he still possesses the charter for his lands given to his ancestor, signed by Robert II, and dated *Arnele*, in the second year of his reign. How long Bruce remained in Arran is not with certainty known. The accurate Lord Hailes says that Bruce sent a confidential messenger to sound the dispositions of his vassals in Carrick around his hereditary castle of Turnberry, with instructions to kindle a fire as a signal, if matters were found in a favourable state. Bruce's watchful eye caught the wished-for blaze, and, full of expectation, he sailed with his followers from *King's-cross-point*. The fire had not been kindled by his messenger, and he found everything in the most hopeless state; but it was now too late to retreat, and obeying the dictates of courage, he and his faithful friends went forward with their undertaking, and, from this desperate crisis, everything prospered with him; the tide of victory continuing to flow.

As the greater part of Arran was in the possession of the High Steward, when, on the failure of male heirs to Bruce, the High Steward, under the title of Robert II., ascended the Scottish throne, the Island of Arran by this event became, to a great extent, the patrimony of the crown; and its inhabitants having on this occasion taken up arms in behalf of their master, they were not only freed from a tribute of corn which they had formerly paid, but had, besides, privileges granted them. In conjunction with the men of Bute, they constituted the celebrated corps called *Brandani*, who afterwards acted as the king's

body-guard. As the Island of Arran was at this time mostly covered with wood, and richly stocked with game of all kinds, it became a favourite resort of the kings of Scotland in their hunting excursions. The Castle of Lochranza, which still remains, was built by one of the Stuart kings, as a hunting-seat. During the minority of James III., when Lord Boyd was the ruling favourite at court, through his influence the king's sister was given in marriage to Sir Thomas Boyd, his son, with the Island of Arran, erected into an earldom, for her marriage portion. On the disgrace of the Boyds, Sir Thomas Boyd being divorced from the Princess Margaret, she was given by the king, her brother, to Lord Hamilton, and the title and estates of Arran were thus transferred to this noble family, and the greater part of this interesting island continues the property of the Duke of Hamilton to this day.

It may not be improper to conclude these notices of Arran in olden times with the account given of it by Donald Monro, dean of the Isles, in the year 1594.

“Be north or northiest fra Elsay [Ailsa] twenty-four miles of the sea, lies Arran, ane grate ile, full of grate mountains and forrests, good for hunting, with pairt of woods, extending in lenthe from the Kyle of Arran to Castle Dounan, southwast to twenty-four myles, and from the Kyle of Drumdoun to the Ness of Kilbride, sixteen myles of breadthe—inhabit only at the sea-coasts. Herein are thre castils—an callit Braizay, pertaining to the Earle of Arran; ane uther



auld hoose callit the eastil of the heid of Loehrenasay, pertyning likewise to the said earle; and the third callit Castle Dounain, pertaining to ane of the Stuarts of Bute's blood, callit Mr. James; he and his bluid are the best men in that countrey. In Arran is a loche called Lochrenasay, with three or four small waters; two paroch kirks, the ane callit Kilbride, the other callit Kilmure. Forenent this ile layes the coste of Kyle, in the east and southeist, be ten or twelve myles of sea in the north, Bute be eight myles of sea, in the west Skibness, pertening to the Earle of Argyle.

“On the shore of this iyle lyes Plada, ane little iyle full of cunings; with ane uther little iyle callit the yle of Molass, quherin there was foundit by Johne, Lord of the Iles, ane monastery of friars, which is decayit.”

It would be interesting, after this short sketch of the civil history of the island, if we could give even as short a sketch of its religious history. It is probable that we would have first to speak of Druidical worship, carried on amidst the gloom of forests with which Arran in aneient times was nearly covered; and of the human vietims offered up in their sacred groves. The cireles of stones found in various places, especially at Tormore, seem to be the remains of Druidical places of worship, though some deny that the Druids ever had a footing in any place of Scotland.

When the Norwegians over-ran the island, and kept possession of it for so many years, we doubt not

that they would be so far successful in introducing the Scandinavian mythology. History, however, has left no record of these days of darkness. It is melancholy to reflect that, whether under Druidical or Scandinavian influence, the people were dwelling in the habitations of darkness and cruelty, and perishing for lack of knowledge. The time arrived, however, when, on the region of the shadow of death the Sun of Righteousness arose, with healing in his beams; when they who sat in darkness saw a great light, and could joyfully say, "Our light has come, and the glory of the Lord has arisen on us." The Gospel light that gladdened Iona was not confined to that highly favoured island, but shed its blessed influence on other lands and isles of the sea, and among these on Arran. The memory of the just is blessed. The numerous Heathen priests, who made great pretensions to sacred lore, lived and died in that island, and left not behind them the vestige of a name. *Molios*, the first Christian missionary to Arran, spent his life in the service of his Master, seeking to be instrumental in causing light to arise in darkness, and in making the moral wilderness to blossom; and the savoury remembrance of his name has been preserved throughout many generations; and the temporary place of his abode in the Holy Isle in Arran, and the grave in which he rests, are still reverently visited by both natives and strangers.\*

\* It would require more leisure, and more books than I have at command, to trace the rise of Christianity in Scotland; and even with sufficient leisure, and with all the books on the subject

It would be well if we could say that this light from Iona continued to shine, and that the pure doctrines taught by St. Columba and his disciples con-

which the world *now* contains, we could not free the matter from uncertainty. Still more would this be the case were we to limit the inquiry to the introduction of Christianity into Arran. Though St. Molios may have found the inhabitants of Arran in a state of darkness, it does not follow that no Gospel light had ever visited the island before. St. Columba seems to have found much Heathenism both in Scotland and England, and yet the Gospel had been preached in these countries long before his time. Tertullian, who wrote about the end of the second century, tells us that Christianity had penetrated into the remotest parts of Britain before his time. Eusebius, writing in the fourth century, tells us that the Gospel had been preached in Britain by some of the apostles. The tradition is, that St. Paul preached the Gospel in England, and St. John in Scotland. Even the invasions of the ambitious Romans may have been instrumental in promoting the spread of the Gospel of peace, for in the Roman army we doubt not there would be many "devout soldiers," who would silently sow the good seed of the word. Buchanan tells us that David I., king of the Scots, was converted to Christianity about the beginning of the third century. And this is not mentioned as the introduction of Christianity, but as the embracing by the king of a religion already professed by many of his people. During his reign, however, everything was thrown into confusion by the invasion of the Romans under the Emperor Severus, so that we hear little of Christianity till about a century afterwards. Then the persecution of the Christians under the Emperor Dioclesian extended to the south of Britain, in consequence of which many of the followers of Christ, to escape imprisonment or death, fled for refuge into Scotland. At the time of Stephen's martyrdom, there was a great persecution against the Church at Jerusalem; but it promoted the spread of the Gospel, for all the preachers, except the apostles, were scattered abroad throughout the regions of Judea and Samaria. In like manner, when, in consequence of the persecution under Dioclesian, many believers fled to Scotland, they carried their religious principles along

tinued to shed their benignant influence; but a dark cloud, proceeding from Rome, gradually overshadowed the land, extending its baneful influence to the peaceful isles of the sea. Even from Popery, however, lessons may be learned. Let those who are of purer faith imitate the zeal both of the priests and people, and let them show a similar readiness to have places of worship at such distances as will suit the convenience of the worshippers. In Popish times, churches seem to have been more numerous than they have at any time been under the influence of Presbyterianism. There was, as we have seen, a monastery in the Holy Island, said by some to have been built by one of the sons of Somerled, and endowed by him with the lands around the Bay of Lamlash. There was a church at Kilmichael in Glencloy, the foundations of which remained till lately. There was a church at

with them, and their love to Jesus for whom they suffered; and the consequence was, a great revival in the country to which they had fled. During this revival many holy men arose in Scotland, and among others St. Patrick, who was born near Dumbarton. When he was about thirteen years of age, he was taken prisoner by the Irish, and sold as a slave to one of their kings. When he had been four years in a state of slavery he was ransomed by his parents, and after receiving religious education at home and abroad, in the providence of God, he came as a Christian missionary to Ireland, to raise to the liberty of the Gospel those by whom he had been enslaved. A season of great darkness having come upon Scotland, owing, it may be, to the incursions of the heathenish Scandinavian tribes, Ireland repaid her debt to Scotland for St. Patrick, by sending to Iona the celebrated St. Columba. In the subsequent religious history of Scotland and Ireland, we find repeated instances of their being thus mutually beneficial to each other, in giving and receiving.

South Sannox, dedicated to St. Michael; and a rude image of the patron saint has been preserved by being built into the wall surrounding the church-yard. At Glen Ashdale, near Whiting Bay, there seems to have been another church. The church-yard, with its rude monumental stones, may still be seen; and ancient silver coins were lately got in some of the graves.

How long Arran continued under Popish influence after the Reformation I know not. Though nominally Protestant, it partook of the general deadness during the last century. Early, however, in the present century, a better day began to dawn. In 1804 and 1805 there was some awakening in the northern parts of the island. This was the commencement of the revival that followed. Several began to relish Gospel truths, to attend diligently on the means of grace, to worship God in their families, and to have religious meetings in many parts; and in a few years a change for the better was evident throughout the island, especially in the parish of Kilmorie, where the pious and laborious Mr. M-Bride was at the time minister. In preaching, he did not often dwell on alarming topics, but he was very serious and searching, dwelling much on the love of God—the riches of divine grace—the consolations of the Gospel, with much unction and many close appeals to the conscience, which the Spirit of God brought home to the heart. But though some were savingly impressed, many, many waxed bolder in sin, and became more stout-hearted. This greatly grieved the worthy pastor and

the pious portion of the people, and rendered them more frequent and fervent in their prayers, that when the enemy was coming in like a flood, the Spirit of the Lord would raise up a standard against the enemy. The vision tarried, but they waited for it. They continued about a year in these devotional exercises, often enjoying great freedom and nearness to God, seeming to be animated by the Spirit of him who said: "For Zion's sake I will not hold my peace, and for Jerusalem's sake I will not rest, until the righteousness thereof go forth as brightness, and the salvation thereof as a lamp that burneth." Soon after this, in the spring of 1812, what has been called the Arran revival began. Some of the outward manifestations were unexpected, and excited surprise. Those who were deeply affected, were led to cry out, and they who first felt themselves constrained to do so were the most truly pious. But though this began with them, it extended to others; first to those who had convictions, and then to the gay, and thoughtless, and even the openly wicked. When it became general it was attended with panting, trembling, and convulsive appearances. Those who were first affected said that they had no idea of crying out, but that they felt themselves so constrained that they could not have helped it, though they had been threatened with instant death. They said that the cryings and bodily agitations proceeded from the deep impressions which they had of the importance of divine truth. This, however, was the case with those who had been brought under the influence of the truth before these

outward manifestations showed themselves. Others there were who could give no very satisfactory account of the matter; for though their affections were moved at the time by a kind of sympathy with others, the favourable impressions made soon passed away. In many, however, the fruit was unto holiness. There was an increased thirst for the water of life—a great crowding to hear the word of God at private meetings during the week, and at public ordinances on Sabbath. They longed for the return of the Sabbath. They rejoiced when it was said to them, “Let us go into the house of the Lord.” Many thought it no hardship to travel twelve or fifteen miles to public ordinances. They could say, like the Psalmist, “As the hart panteth after the water-brooks, so panteth my soul after thee, O God. My soul thirsteth for God, for the living God: when shall I come and appear before God.” Their desire was so great as not to be easily satisfied; and they eagerly sought after renewed opportunities of receiving spiritual instruction. This state of matters continued for nearly a year. As the awakening declined, some of those who appeared at one time much affected, and much engaged in religious pursuits, began to grow cold and remiss, and to slide back into conformity to the world. They showed themselves to be like those spoken of in the Gospel, who heard the word with joy, but when temptation came, fell away. But it is stated, on good authority, that a considerable number of the subjects of the work continued in after years to bring forth fruit

meet for repentance, and to lead lives of faith and of godliness.\*

Were I to bring down this sketch of the history of religion in Arran to the present day, I would be led to speak of the Disruption, and of the effects of that event; but as there has been nothing peculiar in the case of Arran, it may be passed over as more properly belonging to the religious history of the country in general. There is in Arran a great reverence for religion; and there are not a few of the good old seed remaining, who are still walking with God; but their fear is that the spirit of deadness and of formality is gaining ground; and their prayer is, that the Lord would revive his work in the midst of the years, and grant a copious outpouring of his Spirit, that there may be a time of refreshing from the presence of the Lord—a plentiful rain to confirm his inheritance when it is weary.

\* What I have stated on this subject is a kind of abstract of the interesting statement published as a tract, entitled “Revival in Arran,” by the late pious and worthy Mr. M’Millan, long minister of the parish of Kilmorie, in which the revival chiefly took place.



## CHAPTER II.

### REMINISCENCES OF VARIOUS EXCURSIONS TO ARRAN.

First visit to Arran—Set sail at mid-day in a wherry, and reach the island at midnight—Walk to Corrie next morning—Sweet Sabbath morning—Preached on the Green at Cromla—Next day visited the limestone quarry and the Blue Rock—Plants found.

It is now many years since I for the first time visited the Island of Arran. It was on a fine Saturday of July that I sailed at noon from Salcoats harbour in a little half-decked wherry—the only kind of craft as passage-boats at that period on the station; for steamers were then in their infancy, and thought utterly unfit for navigating so open a sea. I was not altogether an inexperienced landsman, for I had sailed from Leith to Pettycur, in the kingdom of Fife, no less a distance, I believe, than eight miles, and encountering a storm in returning, and being driven back with torn sails, I had walked to Queensferry, and notwithstanding the gale, had crossed in an open boat, having, as the only fellow-passenger, a fine old minister, who I found was the Rev. Ebenezer Brown of Inverkeithing, the

worthy son of a still worthier and better known father—the Rev. John Brown of Haddington. But this was the greatest sea voyage I had ever set my face to: it was fully fourteen miles across “*a braid reever*,” as an honest woman who had to cross it, in her fears called it, and it was to an island where the inhabitants spoke in an unknown tongue; it might be in the language of Ashdod. Yet I had the boldness to venture, especially as there was scarcely a breath of wind. After rowing out of the harbour of Saltcoats, a slight breeze sprung up which carried us gently on. It soon lulled, however, and became a perfect calm. I wondered at the patience of the boatmen, though it had for its foundation, I believe, a pretty thick substratum of laziness, which made them very unwilling to ply their oars. At last, however, they had recourse to their oars, but soon becoming weary of the work, they contented themselves with whistling for the wind; but the wind lent a deaf ear to their whistle. Imperceptibly, however, we made some progress, so that by sun-set we were near the entrance to Brodick Bay. Though it is a deep bay, owing to the calm, I could hear the happy carol of the Highland boys while they were driving home their sheep and cows. We might have sung a lullaby in response, for we lay motionless on the face of the deep. Not anticipating this state of matters, I had laid in no sea-stores, so that I was glad to get a share of the only biscuit that the boat could furnish. Again, however, they had recourse to their oars, and by dint of rowing, we reached shore at midnight, and I was thankful to get lodgings for

the night in honest William Hendry's, long well known in Brodick.

The only person I knew in the island was an excellent old lady, Mrs. Susan Baillie, a parishioner of mine, whom I was going to visit at her summer residence at Cromla, near Corrie. Next morning I walked up to Cromla, where I was very kindly received. It was a lovely Sabbath, seeming even lovelier than usual in this isle of the sea, where, in my sweet walk along the shore, little was to be seen but the works of God, and little to be heard but the melody of birds, the soft whisperings of the tide as it beat with feeble pulse amongst the pebbles on the strand, or the livelier prattlings of a mountain runlet, as it rushed with merry speed along its rocky channel, or, taking a bold leap from some of the projecting shelves, dashed at once with delight into the cool shaded pool below. I reached Cromla before breakfast, and was kindly received. As the nearest parish church was at Lamlash, about ten miles distant, at Mrs. Baillie's request, I preached on the green. This gratified the Lowland household; but as I had no Gaelic, I fear that the Highlanders who were present were very little edified. As I remained over Monday, I visited the limestone quarry, and the Blue Rock, where there is a good echo, and looked into Sannox Glen. As phenogamous botany was the only department of natural history for which I then had any relish, I spent part of the day in botanizing; and I still remember some of the plants which came under my notice, and which I had rarely met with before, such as *Hy-*

*pericum Androsæmum; Anagallis tenella; Eupatorium cannabinum; Lycopus Europæus; Cirsia Lutea*, and *C. alpina; Scrophularia aquatica; Scutellaria galericulata*, &c. On Tuesday I returned by the swift-sailing wherry, and on this occasion accomplished the passage in about eight hours, and reached in safety the manse of Stevenston, highly gratified with my Highland trip; for a visit to Arran was what, in those days, not every one could boast of.

### CHAPTER III.

Some years afterwards sailed in a steamer from Ardrossan to Lam-lash—Nocturnal walk to Shiskin—Steepness of the path—Next day visit King's Cove—The Residence, according to tradition, of Fingal—In later times of Bruce—The Cave—The plants that adorn the Cave—Tormore—Loch Iorsa—Wild plants—Loch Tanna—Corrie an Lachan—Ascent of Ben Varen—Cyclopean Walls—Alpine plants—Descent—On Thunderguy instead of Lochranza—Reach Lóchranza—View from Ben Varen and Goatfell compared.

YEARS passed on, and steamers becoming venturous, sailed from Ardrossan to Arran twice a-week. On a balmy afternoon about the end of June, I embarked for Arran, and after a pleasant sail arrived at Lam-lash about sunset. As I had only one full day to spare, I wished to make the most of it by ranging over a considerable portion of the island. As I had never seen the King's Cove, I meant to steer my course in the first place in that direction. I was glad, therefore, though it was after sunset when we landed, to offer to accompany a young man, a native of the island, who meant to go by a foot-path over the hills to Shiskin, which was in the neighbourhood of King's Cove. So long as our path was tolerably level, I was a match

in walking for my companion; but when we began to ascend the steep mountain-side, I found that the young *montagnard* had fairly the advantage of me, so that it was with the utmost difficulty that I could keep pace with him. I did my best, however; for though almost breathless at times, as I considered myself rather a good pedestrian, I felt reluctance to cry Halt. I once or twice succeeded in bringing him to a parley respecting his knowledge of the road; for I found that there was so little of a path that he had to be guided by certain little *cairns* placed for that purpose at intervals; and as it was now night, a fine midsummer night, my guide had to stoop down from time to time to catch a view of the guiding cairns betwixt him and the sky. We reached Shiskin about midnight; and with his aid, having aroused the landlady of the little inn, and having got what refreshment in the circumstances could be most speedily furnished, I went to bed, giving myself unreluctantly up to "Nature's sweet restorer, balmy sleep." Next morning I was astir betimes, and after an early breakfast set out for the King's Cove. I was not alone. I had a frolicsome companion, a fine, faithful, kind-hearted fellow, who would have gone through fire and water for my sake, without taking the slightest credit to himself for doing so. He enjoyed the excursion in his own way as much as I did. He had no turn for botany, but he was a zoologist, and quite in his element when engaged in ornithological pursuits. My companion was—a fine sagacious shepherd-dog! I had a great regard for him, both for his own good qualities, and

because I had got him from one dear to my heart. Could I have traced his pedigree, I doubt not that he would have been found to be of high descent—from some sage canine family on the mountains of Galloway; but before he was fairly out of his pup-hood, stolen or strayed, he had come down to the valleys, and after he had been seen wandering about for days, starved, unowned, forlorn, and almost pelted to death by some cruel boys, more savage than the dogs that they egged on to worry him, he was in pity taken into my father's house by a kind-hearted servant girl. Under good treatment, he soon became very handsome, and a great favourite with all. The kindness of the servant girl to him in the time of adversity was never forgotten; and when at one time she lay ill of fever, he continued to lie affectionately at her bedside, seeming laden with grief and returning groan for groan. He was now full-grown, finely marked, with a glossy swirl on his shaggy coat—an honest gawkie-looking dog, with a mild, intelligent, sport-loving eye. It would have done your heart good to hear his joyous bark, or to see his bound of merry glee as we set out through the heather. There was something very peculiar in his mode of jumping for joy. He seemed to have learned it from the lambs in their merry gambols. It was an elastic perpendicular start from the ground to a considerable height, keeping the four feet and the body parallel with the ground, so as to descend on the same spot from which he sprung. It was most evidently the bound of health and joy. Everything was game that came in his way, whether hare or rabbit,

or grouse or crow. He would even leap after the lark as she sprung up towards the sky. The stone-chats were keenly pursued as they flitted from cairn to cairn; but even with them he was unsuccessful. Want of success, however, did not lessen his ardour, and there was no lack of objects of pursuit.

The King's Cove was not only the refuge and residence of King Robert Bruce, when a price was set on his head by the ambitious King of England, but tradition tells, with what truth I wot not, that it was often the residence of Fingal, with his heroic followers, when they resorted to the Island of Arran, their favourite hunting-ground. The cave is scooped out of fine-grained white sandstone. It is 114 feet long, 44 broad, and nearly 50 in height. The strata, dipping down on each side, give the roof the appearance of a Gothic arch. They who are very clear-sighted tell us of broadswords and hunting-scenes engraven on the walls, by the arrow or spear-point, it may be, of some Fingalian or Brucian lithographer; but as it required more imagination than I possessed to decipher these antique engravings, I shall not attempt to describe them. Trap dykes pierce the sandstone cliffs around the cave, and they are also intermingled with masses of claystone porphyry, and of green-coloured pitch-stone. Besides this one, there are several adjoining caves, about as large, but of less interest, as they are only the king's kitchen, the king's cellar, and the king's stable. Everything is interesting in the history of a patriot king, whether in prosperity or in adversity; and it was not without some



emotion that I entered the cave that had often been trodden by Robert the Bruce. His faithful friend, Sir James Douglas, had arrived in the island before him, and not knowing that the king had come to it, it would afford him no small joy when he was made acquainted with this in the manner so well described by the good old historical poet Barbour:—

“The king then blew his horn in by,  
And gart his men that were him by  
Hold them still in privitie:  
And syn again his horn blew he.  
James of Douglas heard him blow,  
And well the blast soon can he know;  
And said, Surelie yon is the king,  
I ken him well by his blowing.  
The third time therewith also he blew,  
And then Sir Robert Boyde him knew,  
And said, Yon is the king, but dreed,  
Go we will forth to him, good speed.”

On the cliffs of the cave may be found, as a very appropriate adornment of a royal residence, *Osmunda regalis*, the royal fern; and in some places in Arran it may well be called a royal plant, for it has been found by Mr. Stewart Murray, eleven and a-half feet in height. Within the cave there are magnificent specimens of *Asplenium marinum*. There are also some good mosses, such as *Gymnostomum rupestre*, *Hedwigia cetera*, &c.

Leaving the cave, I proceeded along the shore to Mauchrie. I passed, without knowing it, Tormore, a very interesting place, which I afterwards, however, visited along with Dr. Curdie. Here there are several antique circles of stones, generally regarded as

Druidical. Near one of the circles there are three upright columns, about fifteen feet above ground, and not less than the half of that, it is probable, under the surface. There had been a fourth, but it had been broken down, and it lies half formed into a mill-stone. These gigantic obelisks are of old red sandstone, and must have been brought from some distance. All around is now a barren, desolate-looking moss; but once, we doubt not, it was the busy haunt of men; and judging from the large oak trunks often found imbedded in the peat moss, the monarch of the forest must have once flourished where there is now nothing but the humble heather and the sterile ling.

Passing Tormore, then, unwittingly on this occasion, after having proceeded a mile or two, I struck up from the shore, and came ere long to what I learned was dignified with the name of Loch Iorsa, though, from its scanty breadth, I never would have supposed that it was the loch from which abundance of trout, and still greater abundance of salmon, are often brought by the cunning angler's deceptive fly, or more ingloriously by the sweeping net. On I wandered, cheered by falling in with several interesting phenogamous plants, which I had not seen in Ayrshire, such as *Gymnadenia conopsea*, with its fine rose-purple spike, filling the air around with the fragrance of its sweet perfume; and *Habenaria albida*, and I think, *H. viridis*; as well as *Drosera Anglica* and *Drosera longifolia*. I came at last to a mountain lake, nearly two miles in length, and a quarter of a mile in breadth. As I had no map of the island, I

knew not what it was. I was much struck with the utter loneliness and sterility of everything around. The plain in which it is situated is nearly covered with blocks of granite, and the soil, which consists chiefly of decomposed granite, can nourish only some patches of dwarfish heather. I found afterwards that this was Loch Tanna; that though nature seems so dead and sterile around, its waters swarm with life, being a fine trouting loch; and that a little stream, that flows from it into the Iorsa (pronounced Erza) is called the Shirrel Burn. Had "The Geology of Arran," by my much-valued friend, Andrew Crombie Ramsay, Esq., been then in my pocket, as in later years it has often to my great advantage been, I would not have rested satisfied without seeing a much more interesting loch at no great distance from this. But though the work was not published for many years afterwards, since he kindly presented me with a copy of it, I am sure he will make me quite welcome to borrow from it in any time of need. His excellent pencil-sketch of what, through ignorance, I missed, I cannot so easily borrow; but I am glad to insert his graphic description.

"Let the geologist turn aside to see a solitary mountain tarn in the silent recesses of Beinn Mhor-roinn. This little sheet of water is by far the most picturesque of all the lochs of Arran, and is situated deep in a hollow called Corrie an Lachan. The place is perfectly lonely—not a tree is near; and except the brown heath on its margin, and a few stunted rushes by the brook, the surrounding hills are almost bare of

vegetation. The water is dark and deep, and the stormy blasts of the mountain never reach its still and unruffled surface. From its edge on all sides but that towards the sea, rise the naked hills, whose sides are formed of massive granite blocks, which, though surely yielding to decay, yet offer a stronger resistance to the destroying influences of time than the softer portions of the mountain, where the decomposing rock may almost be seen slowly crumbling away."

Here stood I, in this barren waste which encompasses Loch Tanna. I was bound for Lochranza, but as I was in search of alpine plants, I resolved to make my way over the highest mountain in view, which, though then unknown to me by name, I afterwards learned was Beinn Mhorroinn (pronounced Ben Varen), almost as high as Goatfell. Half-way up its steep side I was glad to recline by a little limpid fountain, and to share a sandwich with my quadrupedal companion. It was a charming day, though rather too hot for so steep a path; but the geologist will not grudge the labour when he has gained the summit. He will find on the top two ranges of huge granite blocks, like two regular walls meeting at right angles. On the east and west sides the mountain is like a long barn with a rounded roof; but on the north side the space between the rectangular walls is scooped out, leaving tremendous precipices overhanging the Corrie, or hollow in the bosom of the mountain. In the clefts of the granitic walls I found one plant that was new to me, *Salix herbacea*, the least of

our British willows. I got also, in the clefts of the rocks, *Vaccinium vitis Idæa*, *Alchemilla alpina*, *Saxifragu stellaris*, and a few more plants, rather of an alpine character.

As the burning sun, though he had still a good way to run, seemed hastening on to plunge himself into that tempting sea which was now shining under his beams, and in which several islands which I saw from my elevated position, were swimming with much apparent delight, I thought that it was time that I should descend also. I had never been at Lochranza, but as I knew that it was at the north end of the island, I resolved to bend my course to the most northerly houses I saw on the shore. The descent was accomplished in a fifth part of the time I had taken to ascend; for, in early life, when the body is light, and the limbs elastic and strong, descending a mountain is but an easy race. I was at one time brought to a halt by seeing some beautiful moss around a mountain spring, but having gathered some fine specimens of *Bartramia fontana*, I halted not again till I reached the houses I had seen from the mountain-top; but, alas, alas! it was not Lochranza but Thunderguy, so that six good miles lay before me ere my journey was accomplished. The walk was a pleasant one, however. The evening was perfect loveliness. After passing Catacol, the cliffs were richly adorned with natural copsewood, in which the mavis and merle, and many other birds, were raising in happy chorus their evening song of joy. My faithful four-footed companion showed that he had had just enough of it for a time. All his gambols were

over. He had worn himself out in his zoological and ornithological pursuits; and with drooping ears and tail, he was walking soberly at my heels. Soon after sunset Lochranza was reached; there I spent the night comfortably in the inn. Next morning I had a walk of twelve miles to Brodick, but I accomplished it in time to get aboard the steamer for Ardrossan, and I reached home in safety, well-pleased with my Highland ramble. Nothing very rare, it is true, had been found; for the rarest things in all likelihood were passed unnoticed, as at that time, even as a botanist, I felt interested only in phenogamous plants. The distant view from the top of Ben Varen, in favourable circumstances, is splendid, but I desiderated the terrific grandeur of the cliffs, and pinnacles, and yawning chasms, which I had before seen from the summit of Goatfell. One of my college friends, on his return from visiting Arran, told me that when on the top of Goatfell, he had been filled with astonishment, not unmingled with fear. The cliffs were so precipitous, that it almost made him giddy to look down into the chasms, some of which were between two and three thousand feet deep; and that when he looked on the sharp peaks and naked pinnacles, bristling up in this scene of horror and devastation, he could scarcely help thinking that they were the claws of the old dragon ready to clutch him. Some young friends of mine thought they had greater cause of alarm. They had reached the top of Goatfell on a lovely day, and were contemplating the scene around them, when all at once, though they felt no wind,

they saw the sand and small stones driven about at their feet, and heard moanings, or low bellowings proceeding from the clefts of the rocks close beside them. They felt solemnized, and the more so when they observed that a dog which had accompanied them was filled with fear, and came crouching to their feet. The sounds gradually subsided. They could not account for them, nor can I, unless by supposing that they were produced by some irregular currents of wind sweeping along the ground, and playing among the crevices. There are certain sounds, I understand, heard at times among the cliffs of granite mountains; and it may be that to some of these sounds, whatever they are, they listened. Dr. M'Culloch, in his interesting account of the Highlands and Islands of Scotland, says: "The ascent to the top of Goatfell is gentle and easy, and will well repay the visitor." Having remarked that the distant view is too distant to be very interesting, he adds, "But the mountain itself recompenses the spectator for the tameness of the distant view; being unlike any other in Scotland, from its bold spires of natural grey rock; from the depths of the valleys that meet at its summit, branching away into shadowy obscurity; and from the huge and naked precipices around, impending over an abyss whose silence is only disturbed by the sound of the breeze, or of the distant water-fall, and which even the light of noon-day never reaches."

## CHAPTER IV.

Visit Lochranza from Corrie—Caves and boulders near Sannox—

A large boulder the refuge of the last soldier of Cromwell's garrison at Brodick—Glen Sannox—Ruggedness of the path after leaving Sannox—Nearly unridable—Lochranza—The Castle—Herring-fishery—The rich supply of food sent by God—Lochranza seen to advantage from the sea—Return by the shore road—Exceedingly pleasant—Geological phenomenon—Scridan—The Fallen Rocks.

As I passed very rapidly along from Lochranza to Brodick, I shall be the more readily excused for recording a brief reminiscence of a trip to Lochranza in a subsequent year. I set out for Corrie to accompany a lady, Miss M——h, who had never been at Lochranza. She was mounted on a Highland pony; but I knew the ground, and preferred going as a humble pedestrian. I had no cause to regret this. Our path, for a time, was good and pleasant. We passed the angular caves near Sannox, of which Mr. Ramsay has since given a good drawing as well as description, showing that they must have been formed by the influence of the waves previous to their elevation to their present height; and that as deposits of



subfossil shells, similar to those which are now found in the sea and on the shore, are found at the very entrance to these water-worn caves, the elevation of the granite after their formation must have occurred at a comparatively recent geological period. We passed also a very large boulder, which, from its great size, cannot fail to attract attention, but which derives additional interest from tradition. When Oliver Cromwell took possession of Arran, he placed a garrison in Brodick Castle, and strengthened it by raising a bartizan on the north side. The soldiers, conducting themselves with the usual license of conquerors, provoked the Highlanders to such a degree, that, full of indignation, they watched for an opportunity of revenge; and, taking the Englishmen by surprise when they were out on a foraging excursion, they fell upon them, and put them all to the sword. The last of the party that was slain was dragged from his place of concealment under this great stone, which still remains by the road-side on the way to Sannox.\* Proceeding on our journey, we passed the mouth of one of the grandest glens that Scotland can boast of—Glen Sannox. It is worth travelling many miles to have even a passing glance of Glen Sannox; but if it is to be only a passing glance, it should be from the sea, and from an elevated position, such as the paddle-box of a steamer. The *coup d'œil* that is thus obtained is not surpassed in grandeur by any Highland scenery I have ever seen. Though at that time I had only a passing view, I shall never forget the solitary walk

\* *Vide* New Stat. Account of Scotland, article *Kilbride*.

I on another occasion had, not only to the head of the glen, but to the summit of the pinnacle which separates Glen Sannox from Glen Rosa, and thence down Glen Rosa, through more than knee-deep heather, winding my way to Brodick. Had Dr. M'Culloch taken this route, he would have spoken in more laudatory terms of Glen Rosa. He says:—"Near the entrance of Glen Rossie many wild and romantic scenes occur; as well as on the acclivities of the hills in various quarters, and indeed from almost every point about or in this bay. But beyond the entrance of Glen Rossie all beauty ceases, being replaced by wildness without magnificence." Had he gone farther, he would have changed his tone. Had he gone up the glen to the place where a mountain stream forms a junction with Glen Rosa Burn, he would have seen what would have delighted his heart as a geologist, and his eye as a tasteful admirer of magnificent scenery. He might have seen, in the channel of the stream, a fine junction of the granite and schist, pointed out to me by my friend, the Rev. Dr. Paterson, who I think discovered it; and lifting up his eyes, and looking around, he would have seen that he was encompassed by scenery so exceedingly grand that it would bear to be compared even with Glen Sannox. Glen Sannox he ungrudgingly praises:—"The acute and rocky pyramid of Kid Voe offers a peculiarly striking object, giving rise to many remarkable alpine scenes, and somewhat resembling parts of the famed scenery of Glencoe. With the exception, indeed, of Coruisk in Skye, of this last named valley,

and of some of the scarcely accessible glens that lie about the sources of the Dee, Scotland contains no scenery that can be compared, in this style, with that which occurs in these mountain valleys of Arran." . . . . . "Glen Sannox, as it is the most striking, is also the most accessible of these; but it must be followed to the very extremity, even till it rises up towards the summit of Goatfell, as its chief interest lies in that part. But this is landscape beyond the reach of art. It is the sublime of magnitude, and simplicity, and obscurity, and silence." . . . . . "Perpetual twilight appears to reign here, even at mid-day; a gloomy and grey atmosphere uniting, into one visible sort of obscurity, the only lights which the objects ever receive, reflected from rock to rock, and from the clouds which so often involve the lofty boundaries of this valley."

But I have been wandering widely from our path, which lay neither up Glen Sannox, nor down Glen Rosa, but straight onward to Lochranza. After passing South Sannox and North Sannox, where there were at that time some of the poorest cottages I had ever seen inhabited by human beings, the roofs of which, nevertheless, were adorned with abundance of *Corydalis claviculata*, we passed for miles along a rugged path through a bleak, uninteresting tract of country, till the road, at a place known by the name of "the Stairs," became the very perfection of ruggedness. At considerable peril, however, I succeeded in leading the trembling pony up and down these steep and rugged "stairs," though I feared at every step that

horse and rider would be precipitated on the guide.\* At last, however, we came in sight of Lochranza. In approaching Lochranza from the south, the only interesting feature in the landscape is the old castle. The castle is of very considerable antiquity, for Fordun, who wrote about 1380, speaks of it then as one of the royal castles. It must have been well built, for it still remains pretty entire, though kings and nobles, who in their day and generation made it a scene of joy and feasting, have long been slumbering in the dust. But though there is no longer to be seen issuing from its walls a gay array of Scottish nobles, with hounds and horn to hunt the red deer, and to awake the echoes in many a Highland glen, there may be seen here annually, for some time during summer, a scene of activity well fitted to delight the heart. This is a place of rendezvous for the Highland boats during the herring-fishing season, and it is a lovely spectacle to see them launching forth in a summer evening almost in countless numbers, covering the Sound of Kilbrandon, and many of them bearing away towards Lochfyne, which is at no great distance. And a scene of still greater bustle and activity may be beheld when the boats return laden with silvery treasure; part to be spread on the shore to be immediately cured,

\* I understand that there is now an excellent road all the way to Lochranza. Were I to travel it, I would be disposed to adopt, with a little change, the lines in praise of General Wade, who effected a similar change at Glencro:—

Had you seen this road before it was made one,  
You would have held up your hands and blessed Mr. Paterson.

and part to be sent in quick-sailing boats, to furnish a morning feast to the poor as well as to the rich, through a wide extent of country. He must be thoughtless, indeed, who does not see the great goodness of God in furnishing annually so abundant a supply of wholesome, delicious food for even the poorest of the land. This most valuable fish is said to derive its name from the German word *heer*, signifying an army, as expressive of the numbers in which they annually appear on our coasts. They are, indeed, an army—an exceeding great army—not of barbarians, carrying death and destruction before them—not of locusts, leaving desolation and famine behind; but an army that is not only harmless in their life, but a blessing by their death, furnishing a rich supply of nutritive daily food to many myriads of the human race. And, poor things, since they must die before they can be a benefit to us, we are glad that they scarcely taste of the bitterness of death, as they die the very moment they are brought out of the water. Early in the summer they issue in numbers numberless from the deep recesses of the northern seas. Gulls and gannets, whales and porpoises, manifest their joy by their wild screams from above, or by their unwieldy tumblings in the waters around. The living stream is in motion over an extent of hundreds of miles. As it rushes along, the rippling of the water is both heard and seen. Near Shetland the mighty mass separates into different columns, and one great division proceeds to the eastern, and another to the western shores. The largest and richest-flavoured fish are found in the west,

especially in the deep waters of Lochfyne. Notwithstanding the millions that are yearly caught, it is not wonderful that the mighty army next year should be found undiminished, as in the roe of a single fish of average size about 37,000 eggs have been counted. The sea is thus made to teem with life for the support of life. O that while the Lord thus abundantly blesses us, like Joseph, with the blessings of the deep that lieth under, he would also render us truly desirous of being blessed by the Almighty with blessings of heaven above!

To behold Lochranza to advantage, it must be seen from the sea, or from the very entrance to the loch. Then the picture is a noble one. In the foreground you have the old castle, and around it, in the fishing season, the green strewn with fish and nets, and casks and carts, mingled with curers and coopers, on one hand, and women and children on the other hand, around smoking fires, over which pots are suspended, that from the boiling refuse they may extract the oil. Immediately over the castle you see the heights of Tornidneon; and over them, at a greater distance, you behold in savage grandeur that serrated range of mountain cliffs and pinnacles which lie on the north side of wild Glen Sannox. But have not thy charms, Lochranza, obtained for thee a bard, who plucked a pinion from the eagle's wing, and with it in unfading colours sketched thine ancient castle, and thine inland bay—the smoke ascending from thy hamlet lone, and the peaked summits of thy circling hills, smiling, as greeted by the setting sun?

“ On fair Lochranza streamed the early day;  
There wreaths of cottage-smoke are upward curl'd  
From the lone hamlet, which her inland bay  
And circling mountains sever from the world;  
And there the fishermen his sail unfurl'd,  
The goat-herd drove his kids to steep Ben-ghoil;  
Before the hut the dame her spindle twirl'd,  
Courting the sun-beam, as she plied her toil—  
For wake where'er he may, man wakes to care and toil.”

*Lord of the Isles.*

We have more than once in a summer evening contemplated with great delight from Newton Point,—Lochranza lying in solitary beauty, overtopped by the gleaming peaks of Caistael Abhael and Ceum na Cailleach, while mountain peaks and ancient tower were sweetly reflected from the placid loch.

“ The lake returned in chastened gleam  
The purple cloud, the golden beam,  
Reflected in the crystal pool.  
Headland and bank lay fair and cool;  
The weather-tinted rock and tower,  
Each drooping tree, each fairy flower;  
So true, so soft the mirror gave,  
As if there lay beneath the wave,  
Secure from trouble, toil, and care,  
A world than earthly world more fair.”

The reader may almost have forgotten that after having accomplished our precarious pilgrimage over the mountain stair-steps, we are at the inn at Lochranza. There we were to tarry only for an hour; but how were we to return? Must the same rugged road again be tried, risking a new horse, and rider, and guide? Was there no other way? was our earnest inquiry. Happy were we to learn that there was another way,

and without hesitation we took it, though we were told that it was about two miles longer. How great was the contrast! The former way was all ruggedness beneath, and all sterility around; here, on the contrary, after reaching Laggan farm by a tolerable bridle road, we had a charming view of Ayrshire, Bute, and Cumbræ, while the placid intervening sea, studded with vessels of various shape and size, gave life and cheerfulness to the scene. When we reached the shore, though the landward view was limited by the nature of the rising ground, it was very delightful. It was Nature in her native charms, and in her own dress, exhibiting at times much wild fantastic loveliness. Though from Laggan our road at best was only a footpath, and in many places only the green untrodden turf, it was quite rideable except at one place, and that place, notwithstanding its formidable aspect, was nothing to the rugged *stairs* by which we approached Lochranza in the forenoon. The place of which I speak is the well-known *Fallen Rocks*, where the mountain-side has given way, and coming down as an avalanche, has left the declivity from the very top to the sea-side, like a troubled stream of large stones. There is a spectacle somewhat similar, but on a still grander scale, at Scridan, a little to the north of the place where we at this time approached the shore. There the disrupted fragments are of such magnitude that, instead of being like a stream of stones, one might mistake them for so many Highland cottages that had been swept on towards the sea by a mountain torrent. This part of the coast I have



repeatedly visited; but it does not at present lie in our way, and therefore for a far better account of it than I could at all give, and of the geological features of this interesting part of the coast from the Castle of Arran to the anticlinal axis near North Sannox, I have pleasure in referring to the valuable little work which I have already mentioned by my warm-hearted scientific friend, Andrew Crombie Ramsay, Esq.

Having passed the *Fallen Rocks* and the *Blue Rock*, where there was much that was sufficiently interesting to detain us had we not often been there before, we soon reached Corrie, much pleased with our little expedition, and not unwilling to be refreshed with that favourite beverage which

“ Cheers, and not inebriates.”

## CHAPTER V.

Sail from Corrie for Lochranza—Wind becoming unfavourable, obliged to land—Resolve to walk—It becomes misty—The whole party, young and old, wander—Pitiful plight, contending in the mist with wind and rain—After four hours' walking, recognise Tornidneon with delight, and reach Lochranza in safety—Interchange of visits with Rev. Dr. Paterson—Description of his lodgings—Walk with the Doctor along the shore—Plants found—Cliffs of Drummadoon—Another walk to Lochranza—The great beauty of the shore—Very interesting to geologists—Catacol—The walk to Lochranza beautiful—Plants and shells found—Walk through the mountains to Duchray—Another walk from Lochranza to Brodick by Loch Iorsa, accompanied by Major Martin and Dr. Curdie—Plants found at the loch, and on the moor, and at Loch Davie—Description of *Utricularia*—Glen Iorsa—Start a red deer—Heavy rain, and close mist—Lose our way, and wander among the hills—Reach Loch Noosh—It clears a little, and we find the road to Brodick.

IN this chapter I shall briefly give my reminiscences of two excursions, which will show that Arran, though in fine weather a delightful residence, is not a scene of perpetual sunshine.

In 1840 I had made arrangements to spend a short time at Lochranza with my family. I had given orders that some wheeled carriage should be in readiness for us when we landed from the steamer at

Brodict, to convey us to Lochranza, as I understood that the new road was completed. When we reached Brodict, I was informed that the new road had not been completed, and that to take a wheeled carriage to Lochranza was impossible. What, then, was to be done? There were no balloons; but it was suggested that we might drive to Corrie, and there hire a boat to convey us. This seemed very practicable, and, acting upon it, we sent the feebler portion of the party on before us, and two stout boys and I followed on foot. On reaching Corrie, we hired a boat, which soon set sail, leaving the boys and myself to walk along the delightful shore, which we greatly preferred. By the time we reached the Blue Rock, a very unfavourable change of weather had taken place. A stiff breeze had sprung up from the north, and the day had become wet and misty. After we had passed the Blue Rock, to our surprise, we came up to the boat, and found that the boatmen had landed their passengers. On inquiry, we found that the wind was quite ahead, and that neither by sailing nor rowing could they make way against it. Being thus brought to a stand, a council of war was held. "Shall we return to Corrie, or shall we proceed on foot?" All were for proceeding. "But are you able for the rough walk?" said I to the females and to the young travellers. "We are willing, and we think we are able," was the reply. I was for going along the shore by the Fallen Rocks and Laggan, but the boatmen, who were to follow next day, if more favourable, with the luggage, said that the shore road was some miles longer, and

that we had much better take the inland road. "Setting a stout heart to a stey brae," we struck upwards in the direction of the inland road, and coming to a house which we knew was the last house we would see till we reached Lochranza, we applied to the inmates for instructions. They pointed out to us the road, or rather the direction, in which we were to proceed, for the fog had now become so thick that we could not see many yards before us. We had not advanced far till the faintly marked footpath seemed to become two—one diverging to the right and another to the left. We turned to the left. When darkness hangs over the future, like the mist on our doubtful footpath, of what consequence is it to have good guidance! We turned to the left, as it seemed rather the more beaten track. Alas! alas! for that very reason we should have turned to the right. At all events, in the journey of life, this is the case; for the broad beaten path leadeth to destruction. On we went, however, and ere long the track disappeared, and we were evidently in the pathless wild, and they all began to see the precariousness of their position, and to ask with great earnestness whether I knew where we were. I felt myself in a most unpleasant predicament, as a blind leader of the blind. After walking for two hours, we were still out at sea without rudder and without chart. Though it blew a gale mingled with heavy rain, the fog was so thick that we were often deceived. We often thought we saw a house, but it was but a great rock surmounted by heather; and what we had hoped were human beings

meeting us, proved only some of the black cattle of the wild moor. We had already been three hours on the march, and had made little progress, for wind and rain were full in our face, and we occasionally tumbled into deep holes which were concealed by the long heather. For another hour we struggled forward, and evening was drawing on apace. There were seven of us in all. The maid-servant, who had never been across seas amidst Highland hills before, was the first to despond, thinking, I suppose, that all was over with us, and that she would never see Stevenston Manse again. Little Janet also, not six years of age, began almost tearfully to ask me whether I thought we would get to Lochranza that night. That was a question more easily asked than answered, for if, in the fog, we had taken a westerly instead of a northerly direction, we had yet a dozen good miles of moss and moor, of hill and glen, before we could reach a human habitation. I was afraid that the strength of my daughters would fail. It was well that the two boys were stout, especially William, the elder of the two, who has since had more dangerous wanderings in the wilds of Australia. He, aided by David, carried their little sister, and kept up her drooping spirits. After we had been about four hours in this plight, we came to a stream running in a deep rocky channel through a narrow ravine, and the rain having ceased, and the fog clearing away, I could see a steep hill on the other side of the stream which seemed familiar to me, and I cried out with delight, "I now know where we are!" "Where?" they simultaneously exclaimed. "In Glen

Eisnabearadh," was the ready response; "and *that* (pointing to the conical hill on the other side of the swollen stream) is my old friend Tornidneon, not a mile from Lochranza." Every countenance beamed with joy. There was no longer any weariness; the youngest became merry as a lark, and frisked about like a mountain kid of the goats. The two boys skipped down the glen at full speed, to have all in readiness for us on our arrival. Our lodgings were to be in the inn, and our hostess, Mrs. Maelarty, notwithstanding the inauspicious name, was kind and cleanly, and did everything in her power to render us comfortable. We had, of course, a banquet of tea, and in the reclining style of the ancients (though they knew not the luxury of tea), for as we were all completely drenched, and our whole change of raiment in the boatman's house at Corrie, we had to go to bed till our clothes were dried. We slept soundly through the night, and were refreshed, and had reason to bless God that none of us had in the least suffered by the pilgrimage of the preceding day; and we continued greatly to enjoy our temporary sojourn at Lochranza.

It added not a little to our enjoyment of it, that my worthy friend, the Rev. Dr. N. Paterson of St. Andrew's Church, Glasgow, was rustivating at the same time with three of his boys at Duchray, and we had the pleasure of interchanging visits with them. My two boys and I visited them first. We found them in the best lodgings in the *town* of Duchray, for so a little cluster of farm-houses is called. The approach to their state-room, their only apartment,

was through the kitchen, from which it was separated by a door which, even when shut, afforded free ingress and egress to company that occasionally visited them. The dogs, of which there is always a goodly number about a Highland farm-house, and also the cats, found ready *ish* and entrance under the door; and the hens, without let or hindrance, could fly over above the door. A man's life consisteth not in the abundance of his possessions, nor in the elegance of his apartments, for with this wayfaring lodge my happy-minded friend was quite delighted; and a happier group than it then contained is seldom, I suspect, to be found in the splendid mansions of the great. But we were still happier when roaming abroad, for it was not to shut ourselves up in houses that we had come to the island. The *youngers* spent the day in angling, while the Doctor and I were engaged in geological pursuits. As *our* nocturnal lodgings had been in another house in the *town*, I had a solitary walk in the morning, and found very stately specimens of *Cotyledon umbilicus*, and some other interesting plants among the rocks; and at that hour of prime I saw some beautiful *Helices* enjoying their morningpromenade—*Helix fusca*, *H. hortensis*, and *H. arbustorum*; and I saw at work a magnificent spider, with which my arachnephilological friend, Mr. Adam White, would have been perfectly delighted. It was an *Epeïra*, like one that I shall afterwards mention as an inhabitant of King's-cross-point, but it was more splendid—being beautifully marked like a leopard; and whereas the other *Epeïra* had its house suspended

on grass or on heather twigs, this one had chosen as its abode a sheltered crevice of the stable rock.

After breakfast we set out along the shore, and went as far as Blackwater-foot, where the botanist may find, in considerable abundance, several plants of not very frequent occurrence. There *Convolvulus soldanella* shows in July and August its fine large rose-coloured flowers. There also may be seen *Crambe maritima*, sea-kale, which many would rather see smoking on the dinner-table than growing on the sea-shore. *Lithospermum maritimum* trails beautifully along the strand, the flavour of which, it has been observed, greatly resembles that of oysters. There, too, is found *Lithospermum officinale*, a plant rarely met with in Scotland; and there also, if I remember aright, I found *Raphanus maritimus*, sea radish.

Our chief object, however, in this forenoon ramble was Drummadoon; that is, the bold majestic promontory that goes by that name. The face of this picturesque cliff presents a striking range of columns of porphyritic basalt. The pillars are generally pentagonal, rising perpendicularly about 80 or one 100 feet, and resting on a basis chiefly of sandstone, so that the cliffs where highest may be nearly 300 feet above the plain. It would appear that in Penant's time a round fort surmounted this bold promontory, and that from this circumstance the place got the name of Drummadoon, which signifies the ridge of the fort. No part of the fort now remains, but there is a mass of stones which may at one time



have formed a cairn or fort, and this great accumulation of stones is surrounded by a loose stone dyke, in the middle of which there seems to have been a gateway.

There is no great pleasure in looking even at the bold cliffs of Drummadoon in the midst of wind and rain; but if this day was unpropitious, next day made ample compensation. It was lovely, and quite suited for a pleasure walk along the shore to Lochranza with our friends, who were going to return our visit. The distance is about twelve miles. The beauty of this part of the coast is not sufficiently known. It is not without its charms, even when the highway is kept; and the geologist, in particular, cannot fail to be delighted with the fantastic forms which the schistose rocks assume—now twisted like the roots of the gnarled oak, and at other times appearing like the scattered fragments of some ancient castle. At North Thunderguy there are two remarkable masses of rock, which may be seen by the way-side, the figure of which forms a very striking vignette at the close of one of Mr. Ramsay's chapters. They, however, who would enjoy this walk, must, like us on the present occasion, have leisure and light hearts, and the love of nature, and a summer's sun smiling on the beauties of nature. They must, like us, leave the highway, and wend along the unbeaten beach which lies betwixt the sea and the range of elevated cliffs by which the coast is all the way lined. The cliffs in many places present scenes of rugged and fantastic grandeur, where some species of disruption in olden times has

taken place, and where the rocks, instead of settling down, still lie heaped on each other in admirable confusion. Occasionally the ruggedness is softened by a sweet intermixture of brushwood, and ferns, and wild flowers, among which, if I remember aright, *Geranium sanguineum* and *Hypericum androsæmum*, and the stately Fox-glove,\* were not the least conspicuous. Though the strip of level ground betwixt the cliffs and the sea was narrow, now and then we came upon a spot of surpassing beauty, where,—the cliffs receding a little,—a lovely nook seemed to be scooped out, surrounded with a munition of rocks. It seemed formed for a happy habitation—a tasteful marine villa, with enough of ground betwixt it and the bounding cliffs to form a garden, open to the sun and sheltered from wintry blasts. Do any say:

“Oh! that for me some home like this would smile”?

Many, we doubt not, would say so. How wonderful is it, then, that we should so seldom pant after that better, that everlasting home in the heavens, which Christ has prepared for all who love him! where the sun never goes down; where the flowers never fade; where the inhabitants are never sick, and never grow old, and never die; but where their hap-

\* *Fox-gloves*, that is, folks’ gloves, the fairy folks’ gloves, in which there is some meaning; though, according to the notions usually entertained of these little poetical folks, one of these beautiful flowers would better suit as a riding-cloak than as the finger of a glove.

piness is more exquisite than their highest wishes, and permanent as the source from which it flows!

After passing Catacol, the cliffs became richly clothed with shrubs and trees of nature's planting; and the music of the feathered tribes was intermingled with the sound of the waves on the shore, and of the little cascades that here and there descend from the projecting rocks. Though, by the time we reached this, we found that the day was so far spent that it was not expedient to linger long, yet I remember finding, on the damp rocks near the little waterfalls, some minute botanical beauties, such as *Hymenophyllum Wilsoni*, *Hookeria lucens*, and *Funaria Muhlenbergii*. I got also on the shore some of the finest specimens ever I had seen of the beautiful *Pecten obsoletus*.

After spending a day with us at Lochranza in visiting the castle and the loch, and in climbing the steep side of Tornidneon to examine the junction of granite and schist, it would not have suited the Doctor's original and inquisitive cast of mind to retrace his steps along the shore. He must strike out a new path; and the one fixed on was as the crow flies, not indeed up in the air, but over hill and dale in a straight line from Lochranza to Duchray. In the ten or twelve miles that they thus travelled there was not even a Highland shieling, and not one "human face divine" did they behold by the way; but the journey was safely accomplished, with the additional pleasure of angling for an hour or two in a mountain tarn by the way.

I am led by this to give a brief account of a somewhat similar excursion through the mountains about a year afterwards. On a fine though rather gloomy morning, Major Martin, Dr. Curdie, and I, left the inn at Lochranza, to ramble as botanists among the hills and glens, hoping to reach Brodick in the evening as our resting-place for the night. We spent some time at the little fresh-water loch, which is about a quarter of a mile from the inn, where we found abundance of a pretty blue water beauty, *Lobelia Dortmanna*. Near the loch, we found *Hypericum elodes*, rather a rare plant. After entering the wild moor, by Glen Eisnabearadh, we found abundance of a plant of greater rarity than beauty—*Ulva montana*. Sir William Hooker mentions it as lying on the ground, but not attached to it, in stony, moist places, on Goat-fell, Arran. According to Lightfoot, this is the “mountain dulse” of the Scotch; and the Highlanders wash it and rub it between their hands in water, so as to make a paste which they use as a medicine for their calves. We had not proceeded far till it began to drizzle; and as we mounted the heights, not only did the rain descend, but the wind blew. In process of time we reached Loch Davie. Does the reader think that this is a fine sheet of water, several miles in circumference? I have seen many a quarry-hole more magnificent. Nevertheless, this *loch* sent its waters to the north and to the south. It was at the very summit-level, and from one end a stream flowed towards Lochranza; and from the other end a stream flowed down Glen Iorsa. It reminded me of seeing,

in my younger days, the Tweed and the Clyde starting as little rills within a few feet of each other. There was to me something very interesting in seeing these magnificent rivers in their infant state. It was like looking at interesting little children, with the reflection, that artless, and unaspiring, and feeble though they be at present, they may ere long be the great ones of the earth, the benefactors of their race through time, and may shine as the stars of the firmament for ever hereafter. Though the day was unfavourable for botanizing, we had got some good mosses; and in Loch Davie we got a phenogamous plant, which, though not very rare, was at that time new to all of us—*Utricularia vulgaris*, the greater bladderwort. This is an interesting plant, as it shows much wisdom of design in Him who made it to bloom for his own glory in this wild mountain pond. After having seen it, I read with greater interest the following note in “Hooker’s British Flora:” “The British specimens of the genus *Utricularia* are all aquatics; and their roots, stems, and even leaves, are furnished with numerous membraneous, reticulated vesicles, which, according to Hayne, are filled with water, till it is necessary the plant should rise to the surface and expand its blossoms above that fluid. The vesicles are then found to contain only air, by aid of which the plant floats; this air again in autumn gives place to water, and the plant descends to ripen its seed at the bottom. Mr. Wilson observes on the bladders of *Utricularia*, that they have an orifice closed by an elastic valve opening inwards, and of much thinner

texture than the bladder to which it is attached where the crest is placed. Aquatic insects often enter these bladders, and are, of course, confined there."

We were now descending into Glen Iorsa, when, lo! on the acclivity on the left we beheld an animal which was interesting to all of us, but especially to the Major, a keen sportsman, who, though he had often seen herds of wild elephants in Ceylon, had never before seen in its wild state *Cervus elaphus*, the stag or red deer. Knowing that it was without the reach of rifle-shot, it stood a little to gaze at us, and then, trotting lightly away, disappeared in the mist. It was a noble animal, with its branching antlers. The usual height is about three and a half feet, and some have been shot in Blair-Atholl, weighing upwards of eighteen stones. These stately creatures are now rare in the island; but Martin, who wrote a description of Arran about the year 1700, says: "The highest hills of this island serve instead of a forest to maintain the deer, which are about four hundred in number, and they are carefully kept by a forester, to give sport to the Duke of Hamilton, or any of his family that go a-hunting there. For if any of the natives happen to kill a deer without license, which is not often granted, he is liable to a fine of twenty pounds Scots for each deer."

By this time the rain was incessant, and descending in torrents. A dense fog also had settled on the hills, so that we could see nothing but the base of BenVaren on our right. By following the little stream

we came to Loch Iorsa, which, owing to the heavy rain, was in <sup>a</sup>fine state for the angler. We resolved to make the best of our way with all convenient speed to Brodick, and accordingly we began to ascend the hills in that direction; but owing to the dense mist, we soon lost our reckoning, and even Dr. Curdie, who was a native of the island, and had traversed the whole of it, could not tell where we were. Onward, however, we went, without dread or fear. We were stout and healthy, and in good walking trim, and we knew if the worst came to the worst, a few hours light walking would bring us to the sea at the southern extremity of the island. The elements had done their utmost, at least the clouds had been so liberal of their watery treasures that we could not be wetter. The little mountain streams we had to cross had become torrents, and we splashed through them with as much pleasure as if we had been ducks. At last we came to a mountain tarn. None of us knew it, but we conjectured, and I believe aright, that it was Loch Noosh. Soon after this, however, the mist cleared so much up that we knew where we were. We could see a road crossing the island which we knew would lead us to Brodick; and Dr. Curdie could show us from the height his father's farm at Sliddery, telling us with glee how, when a boy, he and his brothers caught abundance of blackcocks. These stately birds are very fond of corn, and they failed not to pay their respects to the *stooks* on this Highland farm when harvest came. The boys, who were placed as guardians of the stuff,

might have driven them away, but that was not their game. They crept into the heart of the *stooks*, and when the blackcocks alighted, and were busily devouring the oats, the boys cautiously slipped up their hands through the sheaves, and catching them by the feet, made the poor blackcocks an easy prey. From the heights we bent our course to the road which we had seen, called the String, and as the rain had continued so heavily to descend that botanizing had long been out of the question, we made straight for Brodick, where, amidst the comfort of dry clothes, and hot meat and drink, and cheerful converse, we could laugh at our plight as we descended the hill, when the rain that had been caught in our coat pockets flowed from our skirts in continued streams.



## CHAPTER VI.

Dredging excursion with Mr. Smith of Jordanhill—Rothesay—Kyles of Bute—Shells found in a newer Pliocene Deposit—Vitrified fort—Molluscs, Crustaceans, and Zoophytes dredged—Sail for Arran—Land at Sannox—Sail for Lamlash—The Bay a rich dredging field—Shells, &c., found—List of Shells found in shelly sand, dredged in the Bay.

THESE last excursions, in which I might be ranked among the children of the mist, bring us down as far as 1841. I shall pass over some eventful years, in which there was little leisure for rambling among hills and glens, and passing on to the summer of 1844, I shall insert a short record, in part connected with Arran.

A cruise is rather an anomalous event in the life of a sober country minister, and a dredging excursion is what seldom falls to the lot of even zealous naturalists. Few have at their command the vessel, the sailors, and the dredging apparatus; and most of us are thankful if we can find time for an occasional ramble for a few hours in a wild glen, or on the mountain-side, or on the teeming shore of the bountiful sea. Great, then, was my delight at being invited

to spend a few days in dredging, along with Mr. Smith of Jordanhill, in his nice little yacht the *Raven*; a pleasure I had not enjoyed since I had been with him in his still nicer yacht the *Amethyst*.

Though the excursion proved a very delightful one, the weather and the scenery being charming, we had less dredging than we expected, for at first it was too calm for dredging, unless we had taken to the row boat, and latterly it became rather too rough for the purpose. But dredging was not our only object. Mr. Smith is well known in the scientific world from what he has done for geology, especially in that branch of it which bears "on the last changes in the relative levels of the land and sea in the British islands." In carrying on his researches, he saw that it was of importance to make a catalogue of the recent shells found at present in our seas, as well as a catalogue of those that are found in our latest deposits, that they may be compared with each other. At the outset he thought that all these comparatively recent deposits were of the same age; but he has been led to conclude that there are recent, and more recent deposits. The older of these he calls by the usual name—the *newer pliocene*, as it contains a few shells not found at present in our seas. The other he calls *post-tertiary*—for though it contains no shell that is not at present found in our adjoining seas, it has evidently been deposited when the sea was on a higher level. His lists of recent, newer pliocene, and post-tertiary shells, are now long, and I have had the pleasure of adding to all the three lists.

But let us begin with the sea off Bute, on our way to Arran. On the 13th of August we *shot* our dredge in the Bay of Rothesay, and were in high expectation of a rich haul, when, lo! all that was brought up was a heather besom. As it had evidently been a denizen of the deep for a considerable time, I carefully scrutinized it branch by branch, but all that I could discover adhering to it were some young scallops (*Pecten opercularis*) and some small crustaceans—the fry, I believe, of *Galathea squamifera*.

From Rothesay we sailed up the Kyles of Bute, and had beautiful scenery been our object, we could not have been disappointed. It was not new to us, but to me it appeared more charming than ever, as I had never seen it in such fine weather before, except from the deck of a crowded steamer. We had one haul of the dredge before we came to anchor near Ruebodach. It was not very productive. There were hundreds of pretty *Ophiuræ*, such as *O. texturata*, *O. albida*, *O. rosula*, *O. granulata*, *O. bellis*; but as there seemed to be nothing rare among them they were returned to the deep. To many, however, these curious animals would have been a rich prize, as, with the exception of *O. texturata*, and sometimes *O. albida*, they are not often to be got on the shore. The smaller ones, indeed, are not uncommon in shallow water at the roots of sea-weeds and under stones. It may be necessary to mention to some of our readers that *Ophiuræ* are a genteeler tribe of star-fishes, with round bodies from an inch to an eighth of an inch in diameter, from which arms or rays proceed, in some

cases three or four inches in length, very like the tails of lizards or little serpents; which resemblance is implied in the name *Ophiuræ*—serpent-tails. We got some very large specimens of *Emarginula fissura*; and two examples of a rare and beautiful *Trochus*, found for the first time in Britain about fifteen years ago, by Major Martin on the shore near Stevenston Burnfoot. As it was thought to be a new species, it was called by Mr. Smith, *Trochus Martini*, but it has since been ascertained that it is *Trochus Millegranus* of Philippi; and it has been found in several places on the west coast, and lately, I observe, on the east coast.

We afterwards rowed to shore in the boat, and landed near Balnacoolie, where Mr. Smith and Mr. Sowerby from London, some years ago, had discovered a rich newer pliocene deposit. We had not been long ashore till we discovered two or three specimens of *Panopæa Bivonæ*, a rare sub-fossil shell, which we were in search of, as it had been found for the first time in Scotland by Mr. Smith and Mr. Sowerby in this same locality. The shells are deposited in thick clay. We got some from which the clay had been washed away, and others by digging. The prevailing shells in the deposit are, *Mya truncata*, *Venerupis virginea*; *Cyprina Islandica*; *Panopæa Bivonæ*; *Nucula rostrata*; *Pecten Islandicus*; and *Tellina proxima*. This pretty little shell is the most abundant, and marks the deposit as newer pliocene.

Next morning we set out in the boat for Ruebodach, where Mr. Smith and Mr. Sowerby first got

the *Panopæa*; and there also we got some more of all the species we had got at Balnacoolie. We afterwards visited a vitrified fort, discovered some years ago by Mr. Smith, on one of the little islands in the Kyles of Bute. When, and how, and why, were these forts formed? We cannot give any very satisfactory answer. History does not tell. A Roman lamp in my possession, found in the vitrified fort at Dundonald, near the Roman camp, leads us to conjecture that they existed when the Romans had possession of much of our country. The one in the Kyles seems to have been a place of defence, in which the occupants were secured not only by the firm vitrified walls, but by a surrounding ditch, the remains of which are still evident.

On returning to the yacht, we dredged for some time; and on hauling the dredge we found it almost filled with fine black mud. Among the mud we found some more *Ophiuræ*, together with a specimen of the pretty zoophyte *Antennularia ramosa*, and *Laomedæa dichotoma*; and caught in the meshes of the dredge, we got a fine large specimen of *Brissus lyrifer*, the fiddle-heart urchin, first discovered by Professor Edward Forbes, when dredging with Mr. Smith a few years ago in the Kyles of Bute. It was two and one-third inches in length, by two inches in breadth. I kept it alive in a jar of sea-water several days after I returned home. When it died, I placed it near the fire, to dry it for preservation as a specimen, but for a considerable time it became more moist and glistening, as some oily matter seemed to exude.

After this we sailed for Arran. We landed at Sannox, and examined the caves mentioned by Mr. Ramsay. We reached Lamnish Bay in the evening, during a stiff breeze, which continued throughout the night. In the forenoon of next day it "took off" a little, according to the phraseology of our sailors, so as to allow us to dredge. To a keen naturalist it is exceedingly exciting to see a well-filled dredge spreading its treasures on the deck. The first haul was full of variety. The mouth of the dredge was filled with *Laminaria saccharina*, on which, among other zoophytes, I was glad to see some good specimens of *Lepralia annulata*, which I had discovered some years before on the Ayrshire coast, when it was new to Britain. Mixed with the sea-weeds there were some very large examples of *Uraster glacialis*, a star-fish which is beautiful when only about six inches in diameter, but which loses much of its beauty when full-grown. There were also three examples of *Goniaster Templetoni*, a very pretty scarlet star-fish, generally considered rare, but which I afterwards found was by no means rare in this bay. There were, besides, many examples of *Echinus miliaris*, and some live specimens of *Echinocyamus pusillus*, the smallest of the sea-urchins, which, when alive, is a beautiful green colour. There was, moreover, the most beautiful *Solaster papposa* I had ever seen—so bright in the colours, and so beautifully shaded, as to be well deserving of the name of sun-star. It had one defect. By some enemy, or by some of the hard rubs of life from which the inhabi-

tants of the deep are not exempted, it had lost one of its fingers or arms, or rays ; but the *vis medicatrix naturæ* was hastening to make up the mutilation. The kindness of nature's God is very manifest even to these inferior animals. They lose their limbs, but it would appear that they do not suffer much thereby ; for in emergencies they often throw them off of their own accord, it may be with a foreknowledge of their second growth, though this is rather problematical. When the soldier loses a limb on the field of battle, he must limp on to the end of his days ; but if he is a hard soldier of Jesus Christ, fighting the good fight of faith, he has this to cheer him, that he shall be raised up at the last day not only unmaimed, but fashioned like unto Christ's glorious body, to live and reign with the Redeemer in unmingled blessedness for evermore.

As the time was now at hand when the steamer in which I was to be homeward bound was to start from Lamlash, we *shot* our dredge for the last time. Up came abundance of sea-weeds and sand. Entangled amongst the roots of the sea-weeds I observed something that seemed new to me. Though, when looking among the roots, it seemed scarcely deserving of notice, on its being returned to its native element in a tumbler of sea-water, I was delighted with its beautiful appearance, and soon found that it was *Comatula rosacea*, the feather-star. Let any person who has not seen it look at the graceful figure of it in the first page of "Forbes's Star-Fishes," and he will have some idea of its surpassing beauty when it

is seen alive with its numerous scarlet plumes gracefully waving in the water. As I had not at that time heard of its being found in the west of Scotland, I thought it very rare; but I now know that it is not uncommon in this bay.

But the puffing steamer was now sending up its volumes of smoke, reminding me that I must quit the *Raven*, and, what was worse, must leave Mr. Smith, whose urbanity of manners, scientific knowledge, and great kindness, had contributed so much to my enjoyment of the excursion. There was not time to examine the load of sand which the dredge contained; but fortunately, before it was all swept back into the deep, I remembered that Mr. Bean of Scarborough had asked me to send him some shelly sand, and I accordingly made up a small packet of it for him. By applying a lens, I soon saw that it was valuable; and I sent half a dozen handfuls of it to him, and kept one for myself. He wrote to me that it was the richest shelly sand he had ever got, except from Guernsey. Many of the shells it contained were very minute; and as the study of microscopic shells was in some degree new to me, I requested him to give me a list of those he found in his larger portion of sand, adding those contained in my handful. I shall subjoin the list, inserting one or two shells found by me in the same delightful bay some years before.

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## LIST OF SHELLS.

1. *Dentalium trachea*, Mont.
2. ——— *glabrum*, Mont.
3. *Dentalium imperforatum*, Mont.
4. *Vermiculum subrotundatum*, Flem.
5. ——— *bicorne*, Flem.
6. ——— *intortum*, Flem.
7. ——— *concentricum*
8. ——— *oblongum*
9. *Renoidea oblonga*, Brown
10. *Nautilus crispus*, Mont.
11. ——— *auricula*
12. *Rotalia Beccaria*
13. ——— *Beccaria*, Var.
14. *Lobatula vulgaris*, Flem.
15. ——— *vulgaris*, Var.
16. *Lagenula marginata*.
17. ——— *striata*
18. ——— *globosa*
19. *Nodosaria linearis*
20. *Arethusa lactea*
21. *Vermilia triquetra*, Lam.
22. *Serpula vermicularis*
23. *Pectinaria Belgica*
24. *Spirorbis lucidus*, Flem.
25. ——— *corrugatus*
26. ——— *neterostrophus*, Flem.
27. *Lottia virginia*
28. ——— *testudinalis*, very abundant under stones in shallow water
29. *Chiton* species, only single small valves, probably young.
30. *Bulla truncata*, Mont.
31. ——— *pellucida*, Bean.
32. ——— *hyalina*, Tuston
33. ——— *mammillata*
34. *Bullimena*, species.
35. *Eulimra polita*
36. *Turritella unica*

37. *Turritella ambigua*
38. *Rissoa rufilabrum*, Alder
39. ——— *costata*
40. ——— *striata*
41. *Rissoa Beanni*, Hanley. This pretty little shell is abundant. It was long confounded with *R. Calathisca*
42. *Rissoa Striatula*
43. ——— *decussata*
44. ——— *reticulata*
45. ——— *costulata*
46. ——— *labiosa*
47. ——— *Harveyi*, Thompson
48. ——— *semistriata*
49. ——— *vittata*
50. ——— *parva*
51. ——— *vitrea*
52. ——— *interrupta*
53. ——— *fulgida*
54. ——— *Balliæ*, Thompson
55. ——— *minutissima*, Bean
56. *Odostomia interstincta*
57. ——— *unidentata*
58. ——— *cylindrica*, Alder
59. *Skenea depressa*
60. ——— *divisa*, Flem.
61. *Natica Alderi*
62. *Trochus umbilicatus*
63. ——— *cinerarius*
64. ——— *millegranus*, Philippi, T. Martini, Smith
65. ——— *subcarinatus*
66. ——— *magus*
67. *Nassa macula*
68. *Cerithium reticulatum*
69. ——— *adversum*
70. *Parthenia turrita*
71. *Fusus attenuatus*
72. — *purpureus*
73. — *septangularis*
74. — *retroversus*, Fleming, Peracle *Flemingii*, Forbes
75. *Cemoria Flemingii*

76. *Terebratula aurita*
77. *Pecten opercularis*. Of late, the fishermen at Lamlash are much in the habit of dredging this pecten for bait.
78. *Lima fragilis*
79. *Lima tenera*
80. *Anomia squamula*, Mont.
81. *Arca lactea*
82. *Nucula margaritacea*
83. ——— non-descript, very large
84. ——— nitida, Sowerby
85. ——— minuta
86. *Cardium exiguum*
87. ——— fasciatum
88. ——— nodosum
89. ——— medium, a single valve, found among shelly sand some years ago, but as it has not been found since, it may have been a stray foreigner.
90. *Macra truncata*
91. ——— solida
92. ——— elliptica
93. *Kellia suborbicularis*
94. *Amphidesma*, species
95. *Tellina donacina*, Mont.
96. *Lucina radula*
97. ——— flexuosa
98. ——— spinifera
99. *Cyprina minima*
100. *Cytherea sinuata*
101. *Hiatella minuta*, Turton
102. *Montacuta bidentata*, Turton
103. *Lacuna vineta*
104. ——— canalis, Turton
105. Unknown.
106. Do.
107. Do.

When we look at this long list of living creatures, of which, as there were often many of the same kind, there were some thousands in a few handfuls of sand,

we are filled with wonder at the amount of life which the deep contains, and at the amount of enjoyment that a kind Creator grants to even the minutest of his creatures. What wisdom is manifested in their structure, and what exquisite workmanship displayed in the formation of their little habitations! Many of them are smaller than a small grain of sand, and yet when they are placed under the microscope, they exhibit the greatest elegance and diversity of form, admirably suited to the creatures by which they were inhabited. He who made and lodged these minute creatures, forgets not one of them; and if his eye watches over creatures, some of which are too small for our unaided eyes to behold, let us not fear that he will fail in his promises to us, if we lay hold on the covenant of promise, and seek to live by the faith of the Son of God, who loved us and gave himself for us. He will be a sun and shield; he will protect and cheer us; he will guide us by his counsel while we live; and when heart and flesh faint and fail, the Lord will be the strength of our heart, and our portion for ever.

## CHAPTER VII.

Revisit Lamlash Bay along with Mr. Smith and two other gentlemen—Sail from the Kyles to Lamlash—Land on the Holy Isle—Two ascend the hill—Two geologize at its base—Visit St. Molios' Cave—Cast anchor for the night in the Bay—An expensive pier converted into a quarry—Sweet music heard in the Bay—Phosphorescence of the waves—Light cast by Mr. Smith on the scriptural account of St. Paul's shipwreck at Malta—A new kind of vessel launched—Dredging.

THOUGH it is not in the order of time, I may here mention, that I had again the pleasure of visiting Lamlash Bay along with Mr. Smith, in August 1846. We were three days afloat in the *Raven*, which had newly undergone repairs, and was very much improved, and rendered a most commodious little yacht. The party this season consisted of four, as there was not only Mr. Smith, but his son, a barrister from London, to delight us with his literary intelligence from the great metropolis; and there was also the Rev. Mr. Story, the kind-hearted parish minister of Roseneath, almost the oldest of my friends. Our route was nearly the same as on the former excursion, so that I shall pass over all that is unconnected with

Arran. The sail from the Kyles of Bute was a most delightful one. The halcyon might have cradled her young with perfect safety on the wave. A pair of fine seals sported for a time around us, and having showed us, by their frolicsome evolutions, how expertly they could swim, they showed us also how well they could dive. When we cleared the Kyles, the gentle breeze was still propitious for carrying us down to Lamlash Bay. We never saw Arran to so much advantage, especially a very interesting part of it—from Sannox to Clachland-point. I had passed Sannox before in a steamer, and enjoyed exceedingly the magnificent *coup d'œil*; but the steamer moves on with such rapidity, that a person gets but a hasty glance;

“ A moment seen, then lost for ever.”

In a yacht, however, with a light breeze, the eye can leisurely enjoy the feast. Stately *Kiech-na-hean* first presents itself:—moving on, you have next a full view of pyramidal *Kier-Vore* filling up the gorge of the glen; while, over its shoulder to the left you see the summits of some of the pinnacles on the west side of Glen Rosa; and gliding on a little farther you obtain a view of the whole sweep of Glen Sannox, including *Ceum-na-caillich* and *Sue-Ergus*, and all the range of peaks on the north side. You have not long passed Glen Sannox till you come into Brodick Bay, when Glen Rosa and the surrounding scenes open on you with equal grandeur, conjoined with the loveliest features of beauty. This scene, whether beheld from the Bay, or as the vessel progresses towards Clach-

land-point, is seen and admired by so many thousands every season, that I shall not attempt to describe it.

Having reached Lamash Bay, we landed on the Holy Isle. Mr. Smith, junior, and Mr. Story, ascended the hill, which is about 1,000 feet in height. As I had been repeatedly on the top of it, Mr. Smith, senior, and I, went to examine a post-tertiary deposit, corresponding with one on the opposite shore, to the south of the village of Lamash, where a bed of shells is found about thirty feet above the present sea-level. Being afterwards joined by our friends from the top of the hill, we proceeded to *St. Molios' Cave*, which I had not seen for twenty years; so that I had forgotten its appearance. Though about twenty-five feet above the level of the sea, it is evidently a water-worn recess under the sandstone rock, which has all the appearance of having been formed by the beating of the waves, when the sea was at a higher level. We looked for the Runic inscription, which I had heard was engraven on the rock, and as I had been rather incredulous on that point, I was a good deal gratified by finding an inscription which had a very antique appearance, and which not one of us could decipher, not even our learned barrister, though he had had the high honour of being first Wrangler at Cambridge—an honour which had not before fallen to the lot of any Scotchman. But though we could not read the writing, we could drink of the crystal well, and judge of its excellence; and we are safe in concluding, from what we saw and tasted, that the streams of living

water which the fountain sends forth are as sweet and exuberant as when they yielded daily refreshment to the venerable saint, and the crowds who came to listen to his instructions. This island took its name at an early period from this holy man. We are told in the Norwegian account of Haco's expedition, that after the battle of Largs, "the king sailed past Cumbra to Melansey, where he lay some nights." In the original it is Melanzeyiar, or in the Flateyan MS. "Melansey,"—evidently the Island of Melos or Molos, *ey* or *eyiar* in the Islandic meaning "*island*." Pen-  
nant tells us that "Buchanan gives this island the Latin name *Molas* and *Molossa*, from its having been the retreat of *St. Maol-jos*." "St. Maol-jos's cave, the residence of that holy man;—his well of most salubrious water; a place for bathing; his chair; and the ruins of his chapel, are shown to strangers; but the walk is far from agreeable, as the island is greatly infested with vipers." To us the walk was very delightful. The evening was one of the finest of the season; the vipers, though not quite extirpated, had gone to rest; some birds among the rocks and brakes were raising their evening song; and it was scarcely possible not to look back to the time when the departed saint had, from his rocky cave, raised his song of praise as incense, and when the lifting up of his hands, and heart, and voice, in prayer, had been as the evening sacrifice. Though a place becomes not sacred by being the abode of holy men, it says little for our piety if we can visit such a place without reverential feelings, and without raising the wish that we may be



followers of those who through faith and patience are now inheriting the promises.

We were much pleased also with the geological features of the island. The columnar cliffs, though far inferior in grandeur to those of Staffa, are nevertheless strikingly picturesque. If they have not the regularity of more celebrated geological colonnades, they are at least free from stiffness, as they consist of various stages or terraces of columns, intermingled with amorphous masses of other rocks, and a sprinkling here and there of herbaceous plants, stunted shrubs, and dwarfish trees, springing from the interstices of the cliffs.

It was getting dark by the time we returned to the yacht; and as there is no harbour, and as the pier is accessible only in certain states of the tide, we came to anchor in the Bay. The want of a harbour here is more regretted when we know that there once was one. The good Duchess Ann of Hamilton, who seems to have been a lady of superior talent, of public spirit, and active benevolence, caused a harbour to be built of large quadrangular blocks of sandstone, the remains of which may still be seen in the large scattered stones where passengers are now landed from steamers in boats at low tides. We may form some idea of the magnitude and solidity of this work, when we are informed that it cost £2,913 : 10 : 5 $\frac{4}{12}$ d.,\* at a time when a mason's wages were eighteenpence, and a labourer's only fourpence, a-day. This harbour, we are told, was taken down

\* Headrick's History of Arran.

by a factor of the Duke's to build the present village. This appears such an act of folly, that we feel disposed to write hard things against the perpetrator of it; but, as he has been long sleeping in his grave, we shall not condemn him unheard, though we think it would require some eloquence to justify this proceeding.

After the shades of evening had fallen around, our attention was attracted by sweet harmonious sounds that came floating to us in full volume over the sleeping waves from another part of the Bay. As it was sacred music, raised by many voices, we at first thought some pious ship's crew were engaged in the worship of God. The lively character of some of the airs that were subsequently sung undeceived us; but, though the charm in part was destroyed, still it was sweet. The performers sung in parts, and with considerable skill; and the notes, aided by a slight echo from the surrounding hills, were exceedingly mellow when they reached us over the deep.

But though it was dark, our eyes were to be feasted as well as our ears. During the day I had let down into the deep a little gauze net, in the hope that it might capture some stray *Beroës* or *Medusæ*. When I began to haul it up in the dark, long before it reached the surface, it seemed a little marine balloon filled with Greek fire. Its wake also was luminous, so that it was truly a splendid object. We had observed this phosphorescence the preceding evening, when we had been under sail, with a slight breeze.

Every wave seemed crested with fire. In the midst, however, of the fiery wave, little stars of considerably greater brilliance might be seen sparkling for a few seconds, and then vanishing. In addition to this, we saw occasionally, at a considerable depth under the surface, luminous appearances, which we were told by the sailors proceeded from shoals of herrings that were passing us. The succeeding evening, when lying at anchor in the Bay, we amused ourselves by splashing in the water with an oar or a rope's end, so as to produce the phosphorescence. So great was the brightness, that we thought it possible to read by the light of these myriads of marine lamps; but though the page was illumined, we could only guess at the contents.

The two ministers were indebted to their Commadore, Mr. Smith, for additional light he was able to throw on an interesting passage of Scripture in the Acts of the Apostles. There was a fine painting in our cabin of St. Paul's weather-beaten ship at anchor off Malta. This had been executed according to Mr. Smith's directions. As he spent a winter lately with his family in Malta, his active mind was led most minutely to investigate everything connected with this shipwreck; and, by a critical examination of the original record by Luke—by studying the structure of ancient vessels—by soundings taken at the very place—and by a variety of things which I shall not enumerate, he has been able to make the passage much more intelligible, and to prove that *Melita* was the *Malta* of the present day. As he means to pub-

lish his treatise, I shall mention only one instance of the advantage derived, for the elucidation of the subject, from studying the structure of ancient vessels. They "loosed their rudder-bands." (Acts xxvii. 40.) I confess I had not been able before to attach any distinct meaning to this. In the painting, however, to which I have referred, you see clearly what it means. They had "cast four anchors out of the stern." Before they had done this, they had bound up the *rudders*, to be out of the water, otherwise they would have been shattered by the waves. In ancient vessels there was not a hinged rudder, as in modern ships, but one on each side of the stern, in the form of a large oar; and when they had taken up the anchors, or rather, as in the marginal translation, had cut away the anchors, and were going to set sail, you see in the painting the crew loosing, not the "rudder-bands," according to the common translation, but "the bands of the rudders," according to the original, that they might be let down into the sea again, to regulate the vessel in "making toward shore."

Saturday came, and recalled Mr. Story and myself to our duty. The boat which carried Mr. Story from the yacht to the morning steamer was accompanied by a boat of rather a singular construction. I had observed on the deck of the yacht a very comfortable-looking hussar-cloak of fine blue cloth; and I concluded that it had been brought for protection from sea-spray, if the weather proved stormy. I found, however, that it could be used not only in storms,

but in fair weather, and that it was somewhat like Goldsmith's cottage piece of furniture—

“A bed by night, a chest of drawers by day.”

It was lined with Macintosh, so as to exclude water and to imprison air injected by means of bellows, formed like an accordion. Mr. Smith, junior, to whom this cloak appertained, caused a portion of it all round to be thus filled with air; and then the cloak became a boat, which he launched, and entered, and in which he could either recline, resting his head on an air-filled pillow; or in which he could sit, plying a paddle in each hand. When, by the action of his paddles, he shot off towards the steamer in the Bay, the passengers were filled with wonder; and one of them, after uttering an ejaculation, cried, “There's a man *sooming* to us in his bed.” It was really a strange-looking craft; and could he have played the harp at the same time that he plied the paddles, the classical part of the steamer's crew might have thought that it was Arion riding on a dolphin. When he returned to the yacht, he said to me, “It is not very easy to capsize this boat;” and, saying so, he placed himself on one of the inflated gunwales, when over went the boat, with the steersman under it. Though I knew that he was an excellent swimmer, I was rather alarmed when he disappeared. But he soon popped up his head, and righted the boat, and got into her again, telling me that he had overbalanced her intentionally, which I soon saw was the case, for he repeated the feat; and, being very lightly dressed, he

could swim about with great ease, and board again, when he chose, his aëriferous vessel.

We were actively employed in dredging on the afternoon of Friday and the forenoon of Saturday; and though we got nothing new, except a fine specimen of a *Lineus* that I had never seen before, we got several rare specimens, which, through Mr. Smith's kindness, found their way into my cabinet. I may mention *Fusus purpureus*, *Fusus septangularis*, *Fusus costatus*, *Trochus tumidus*, *Trochus Montacuti*, *Trochus Martini* of Smith (*T. Millegranus* of Philippi), *Pecten obsoletus*, *Pecten Landsburgii* of Smith (*Pecten Striatus* of Müller), *Chiton lævis*, *Tellina donacina*, *Venus Prideuxiana*, *Emarginula fissura*, &c., &c.

## CHAPTER VIII.\*

Reached Lamlash on an unpleasant day—Next day fine—Much enjoyed by us, though the joy was not unmingled—Walk to Clachland-point, &c.—Land-plants found—Sea-weeds, beautiful, and not unprofitable—Yield golden-ointment—Food for the mind—Arran a fine field for the geologist—The study of geology fitted to elevate the mind—Sir Isaac Newton and Mr. Halley—Geological features of this part of Arran—Reflections.

It is well that, in promising to furnish some sketches from nature, I did not promise to confine myself within the bounds of one parish; for I feel disposed at present to give some proof of my erratic tendencies. The Island of Arran lies most temptingly before us; the steamer from Ardrossan offers to convey us to it any summer's day in little more than an hour; it is endeared to me by many associations; and yet so much have I been professionally engaged, that for three years I have not been in it, except on

\* This chapter and several that follow, were written for the "Christian Treasury," and published in that Periodical before the preceding chapters were written. This may account for some repetitions, &c.

one occasion for a day, and at another time for an hour. On the 9th of June 1845, however, being free from any special engagements for nearly a week, off we set, *en famille*, for this favourite island. Though the day was both wet and windy, we found ourselves, in the afternoon, comfortably located in the pleasant village of Lamlash. Next morning was the commencement of delightful weather, and at an early hour we set out to enter on the enjoyment of it. Every parent knows how much the pleasure of any little excursion is enhanced when his family share in it along with him. And yet in the happiest circumstances there is often a tinge of melancholy. How often, in these little excursions, in looking back on the past, are we reminded of the valley of tears we have passed through, and of the pangs of separation we have experienced! Mournful must be the gathering of the heath fowl at the close of an autumnal day, when the destroyer has been among the hills, when the brood has been widely scattered, and when the sheltering wings under which they had been accustomed to collect and *cower*, are in the possession of the sportsman, cold, and bloody, and lifeless. We mustered pretty strong—a son and three daughters were along with me. But one was not—the beloved mother of the children—and three dear lads who had at times spent delightful days among these hills and glens, were on the opposite side of the globe, tending their flocks and herds in the distant wilds of Australia. May we all be diligent in preparing for that happy land where no dear fellow-traveller drops by



our side, and where no intervening seas separate the members of God's ransomed family!

The early days of June had been cold and stormy, which made us more highly prize the lovely day that now shone forth on us. Our first walk was to Clachland-point, and thence along the rocky shore towards Corriegills. As we all had a turn for natural history, we found much to interest us. At the outset we kept close by the shore, and gathered a few good shells, especially one which is not found with us, but is very common here, *Cardium læviyatatum*, the smooth cockle, of which we collected some large specimens. By the clothed appearance of the ancient sea-cliffs, we were induced to diverge from the shore. The space betwixt the sea and the cliffs must once have been under the dominion of the sea; for in some places the soil is quite marly—made up of the common coral (*Millepora polymorpha*), and small marine shells, and sand. The other side of the Bay is evidently a raised beach, as there is a deposit of marine shells about thirty feet above the present level of the sea. A pretty numerous list might be made of the plants which we found in this part of our walk. There are some fine mosses on the moist cliffs; the rarest of which are *Entosthodon Templetoni* and *Jungermannia Hutchinsiae*. The latter was new to Scotland when I found it about seven years ago in a dripping cave at this place. We found on the rocks several specimens of the royal fern, *Osmunda regalis*, a magnificent plant, the fronds of which, in Arran, are sometimes almost a dozen

feet in length. I shall certainly not speak of the wild hyacinth, wood anemone, and primrose, as rare; for much of their beauty consists in their great profusion. The last, in such a situation as this, is exceedingly lovely—a sweet emblem of modesty, purity, lowliness of mind, and cheerful, smiling happiness. The primrose season was about over. Though we are not sure about “*modest pride*,” the following sonnet must have been written by a primrose-lover:—

“ How sweet thy modest unaffected pride  
Glow on the sunny bank and wood’s warm side!  
And where thy fairy flowers in groups are found,  
The school-boy roams enchantedly along,  
Plucking the fairest with a rude delight:  
While the meek shepherd stops his simple song,  
To gaze a moment on the pleasing sight;  
O’erjoyed to see the flowers that truly bring  
The welcome news of sweet returning spring.”

The moist ground at the base of the rocks was adorned with marsh plants of great beauty—*Sundew*, *Anagallis tenella*, *Samolus valerandi*, and *Myosotis palustris*—so exceedingly fine, that instead of saying, beseechingly, “Forget me not,” it said, as plainly as its lovely blue eyes could say it, “*Can* you forget me?” The hawthorn and the honeysuckle were sending forth their fragrance from the copsewood; the mavis and the sooty merle were contending in song; the latter striving to make up, in mellowness, for the evident superiority of the former in variety and liveliness. The cuckoo, though she had but two notes, seemed well aware that they were welcome ones; for she accompanied us in our walk, as if

unwilling that a voice which is always heard with pleasure, and which was soon to be silent, should be wasted in solitude, where there was no ear by which its music could be appreciated. The cows, after browsing on the green sward, were indulging in sweet and peaceful rumination; and the little boy that tended them, taking advantage of their repose, was enjoying still higher happiness in wantoning amongst the briny waves. What a happy world would this be were there no sin in it! When creation groans, it is because of sin. When the believer, in the struggle with sin, cries out: "O wretched man that I am! who will deliver me from the body of this death?" God in his mercy teaches him to say: "I thank God through Jesus Christ our Lord." How much greater happiness might we enjoy even in this world, were we more grateful to this spiritual Deliverer; were we to walk more closely with God; were we to see more of his hand in the lovely garniture of the earth, and more of his goodness in the happiness enjoyed by the inferior animals, and in causing the beauty of external nature, and the enjoyments of so many living creatures, to contribute, when the heart is renewed, to the higher happiness of man!

As soon as we reached the Clachland-point, which is the north-east extremity of Lamash Bay, we turned down to the sea, being chiefly in search of marine productions. One of the living varieties to be found among these rocks is *Asterina gibbosa*, the gibbous starlet, a pretty little star-fish, which I have not seen mentioned as found anywhere else in Scot-

land, except by Professor Edward Forbes, among the gneiss rocks of Ross-shire. We were, however, chiefly in search of the finer algæ, which are either got among the coarser sea-weeds, cast out by the tide after a breeze, or in settled weather must be sought at low water mark, where they grow on rocks, or as parasites on the larger algæ. Rare kinds are often got by dredging, as they adhere to shells and other substances brought up from the deep. Rich are the groves which in many places clothe the bottom of the sea. Few, perhaps, have been out in a boat in calm weather without admiring the beauty of these submarine forests. It is delightful to observe the elegance of the algæ in their native element, and to see fishes, and various other inhabitants of the deep, playing amongst the fronds, as birds among the branches. These sea-plants not only afford food and shelter to innumerable living creatures, but they are of immense benefit to man, when they are torn up by the storms, and cast out by the tide. The agriculturists at Lamlash are fully aware of their value, and the shore is divided into lots, according to the number of tenants of ground in the neighbourhood; and that they may not complain that their neighbours' lots are richer in sea-wrack than theirs, the lots, instead of being assigned to them in perpetuity, are given to them in rotation, the exchanges being made once a-year. We see how easily the Lord can make the war of elements to serve the purposes of his benignant providence, and cause the spoils of the ocean to increase the fertility of the dry land.

But it was the small and delicate algæ, or sea-weeds, that we were in search of; and we were not altogether unsuccessful. As the study of marine botany is becoming much more general than it once was, it is probable that some of our readers would be disappointed were we vaguely to say that we got some beautiful plants. We shall, therefore, name a few of them. We found, in pools among the sandstone rocks, what is rather rare, and, at all events, very beautiful—*Bryopsis plumosa*; well named specifically *plumose*, for the frond is the exact resemblance of a fine glossy green feather. Some of the others I shall merely name: *Conferva melagonium*, growing along with the *Bryopsis*; *Ceramium ciliatum*, on the rocks, and *Ceramium diaphanum*, on the stronger algæ; *Polysiphonia Brodii*, *Polysiphonia fibrillosa*; *Calithamnion Hookeri*, *Calithamnion polyspermum*—all on the rocks. In a little boat creek, near the point, we found, among the weeds that were drifted in, two that were rare. The one was *Rhodomenia sobolifera*—parasitical on the stem of *Fucus serratus*. It is somewhat like *Rhodomenia palmata* (dulse), but too unlike, both in texture and form, to be only a variety of it. The other was still rarer—*Laurencia tenuissima*; which I do not think had been got in Scotland before, and I got only one drifted specimen. I may mention that all the sea-weeds are cryptogamic plants, destitute of flowers, but having, instead of flowers, capsules and granules, which are called their fruit or fructification; and it is often by these minute parts alone that they can with certainty be distinguished.

Some may wonder that there should be eagerness displayed, and pleasure enjoyed, in making diligent search for diminutive sea-weeds. Were they to see them floating in their native element, they would not be surprised that they are sought after for their beauty; and were they to consider how, by their structure, they are so well suited, with all their delicacy, to live and thrive amidst the restless billows, they would acknowledge that they furnish a proof of the wisdom of God. But it will perhaps go further to reconcile them to what they consider trifling, if we tell them that the most flimsy of them can be converted into good hard cash; and that the weed-gatherers of this household have raised from them upwards of £70, to aid in paying off the debt on our Free churches; and though the debt on *our* two churches at Saltcoats and Stevenston is paid off, there are other churches, and manses, and schools, to which they wish to contribute. They have become very dexterous in preparing them; and, when spread on paper, they are so delicate and beautiful, that few will believe, when they first see them, that they are not elegant paintings.\* They have become much more clear-sighted in their walks on the shore, since they discovered that weeds could be converted into gold and silver. It was amusing to hear even the youngest, a year ago, when nine years of age, saying: "O I have got a beautiful *Calithamnion* in fine *fortification*" ("*fructification*, Janet.") It is no

\* Specimens of these beautifully-prepared sea-weeds may be seen at the shop of the Publisher.

small gratification to make the spoils of the deep, while they show forth, by their beauty, the praises of Him who made them, instrumental, in these times of great emergency, in furthering the erection of churches, in which not only the works of creation and providence may be spoken of, but in which the wonders of redeeming love may be loudly proclaimed.

Arran has been said to be the epitome of the geological world; and I believe that it is not possible to find any place where, in so narrow limits, there is such noble scope for the study of geology. This study may be abused, and has by some been made to serve the purposes of the sceptic; but this is not the fault of geology, but of the evil heart of unbelief. The wasp, it has been alleged, can extract poison from the very flower from which the happy bee extracts delicious, nutritive honey. When the eye is single, there is nothing in nature, with the exception of astronomy, so well fitted as geological researches to fill the mind with adoring wonder, and to give us exalted ideas of the wisdom, and power, and goodness of God. Though "the heavens declare the glory of God, and the firmament sheweth his handiwork," there have been those who, with wicked ingenuity, have attempted to show that the discoveries of astronomy are at variance with what is taught in the Bible; but they spoke in ignorance. When Halley, in the presence of Sir Isaac Newton, ventured to sport some of his sceptical opinions, that great and good man, interrupting him, said: "Mr. Halley, when you speak respecting astronomy, I listen with plea-

sure, for it is a subject that you understand; but when you speak of religion, you speak of what you do not understand, and have never studied; but I have." How many sceptical theories have fallen into merited neglect and contempt, and have only shown how ignorant the theorists were both of true philosophy and of true religion!

That part of the Island of Arran where we were then rambling, is not the best for the geological student; but still it is far from being devoid of interest. A sight of the great pitchstone vein, which manifests itself so boldly on the face of the hill after passing Clachland-point, would, of itself, reward the geologist for a walk of several miles. Pitchstone is found in several localities in Arran; but I saw it in our walk where, I think, it had not been observed before—cropping out above the cliffs on the southwest side of the point, and not far from Clachland farm-house. After turning the point, there is a long range of new red sandstone rocks, belting the shore in rugged grandeur. These are penetrated by several trap dykes, principally green-stone, indurating the sandstone which they intersect. Farther on, the rocks are conglomerate, and intersected by a few porphyritic dykes. The heights above the sandstone and pitchstone, are surmounted by a dark range of rock, assuming a columnar aspect, and which I thought might be basalt; but it turns out to be syenite, which seems to have been sent up from the bowels of the earth in a state of fusion, so as to overflow the other strata through which it had pierced,



The Lord has many arrows in his quiver. The covenant-bow in the clouds tells us that water is not again to be employed in the work of general destruction; but has he not said that “the heavens and the earth which are now, are reserved unto fire, against the day of judgment and perdition of ungodly men, . . . in the which the heavens shall pass away with a great noise, and the elements shall melt with fervent heat, the earth also and the works that are therein shall be burned up”? When the thunder-clouds are struck, sending forth a blaze of lightning to fill the world, and when the fountains of the great deep are broken up, to pour out a flood of fire on the guilty inhabitants of the earth, must all perish? Is there no refuge? He who so often hid his people, in the day of danger, in the hollow of his hand, will no longer hide them, but will bring them forth before assembled worlds as those whom he delights to honour. Then shall it be said of them: “Are these they who once lay among the pots, who are now as the wings of a dove, covered with silver, and her feathers with yellow gold”? Then will their King say: “Come, ye blessed of my Father, inherit the kingdom prepared for you from the foundation of the world.” Then, with a burst of rapture shall they exclaim: “This is our God; we have waited for him, and he will save us: this is our God; we have waited for him, and now we are glad and rejoice in his salvation.”

## CHAPTER IX.

Description of Lamlash Bay—Whitehouse—Much improved, and tastefully adorned—Moral improvement still more delightful—Responsibility of ministers of the Gospel—Walk to the southern extremity of the Bay—Pleasures of dredging—Activity and happiness of some Shell-fish—Scallops dredged—Zoophytes and Algæ found on them—Star-fishes—Sea-urchins—Fishes—Bimaculated sucker—The lesson it teaches.

THOUGH Lamlash has not all the beauty and grandeur of Brodick, it is very far from being devoid of interest. Nature has done much for it. The noble Bay, forming a semicircle, is about three miles in length from north to south. In the mouth of the Bay stands the Holy Isle—a magnificent cone, about a thousand feet in height. On each side of the isle there is a convenient entrance into the bay, which it protects and adorns; and within there is excellent anchorage-ground, of sufficient depth for the largest vessels, and capable of containing a whole navy. What a magnificent breakwater does the Holy Isle form! We read with wonder, as an astonishing achievement of science, of a breakwater being formed by innumerable beams, seventy or eighty feet in

length, being driven through earth and rock by the tremendous power of the steam-hammer; but what is this but as the work of insects, compared with the stupendous might which must have been exercised when this gigantic mole was pushed up through rock, and earth, and water; and the elevated sandstone overflowed by a stream of melted porphyry! Behold the power and the goodness of God! How many, after weathering the storm, and casting anchor under the shelter of this mighty breakwater, have said: "Thanks be to God, we are in Lamlash Bay!" Had Virgil ever been in Britain, we would have thought that he had Lamlash in his eye when he wrote the following description:—

"Est in secessu longo locus; insula portum  
Efficit objectu laterum," &c.

"Within a long recess there lies a bay:  
An island shades it from the rolling sea,  
And forms a port secure for ships to ride."

DRYDEN.

While it reminds the classical scholar of the stately hexameters of the Mantuan bard, it reminds the pious Christian, though learned only in his Bible, of HIM who is "as a hiding-place from the wind, and a covert from the tempest;" and of the strong consolation experienced by those who have fled for refuge to lay hold on the hope set before them; which hope they have "as an anchor of the soul, both sure and stedfast, and which entereth into that within the veil."

Near to the south end of the neat and cheerful village, stands *Whitehouse*, the residence of Mr. Pater-son, the Duke of Hamilton's factor. How much, within my remembrance, has this place been improved and beautified! The rising grounds on each side yielded, some twenty years ago, a scanty crop of grass and heather; an extensive plain behind the house, if I remember aright, was full of peat holes; the ground before the house was a quagmire, on which the hungry cattle at times ventured, at the risk of being swallowed up. The quagmire has been converted into a beautiful verdant lawn; the undulating heights and the peat-producing plain are now waving with the richest crops; the house is embowered in flowering shrubs; and the garden is stocked, not only with culinary esculents and common fruits, but it yields also peaches, and nectarines, and figs. The lover of flowers will find here everything rare and beautiful; and, even at Christmas, he may see *Camelia Japonica* in flower in the open air. On one side of the lawn, the bare walls of an old kiln have been made to assume the appearance of the picturesque ruins of an old chapel; on entering which a person might think that he had made a rapid transit to Madeira, as he sees so many tender exotics in the most healthy and flourishing condition, with no other protection than the ruined walls. One plant of *Fuschia discolor* is so remarkable, that a friend and I had the curiosity to measure it, and found that it was eighteen feet in height by twenty-two feet in breadth. It sows itself so freely, that a numerous offspring may be seen

springing from the border, and even from the chinks and crevices of the walls.

It is pleasant to see, under the influence of taste, and skill, and active industry, the face of nature assuming a more smiling aspect, and the grateful earth rendering more bountiful returns; but how much more pleasant to see any portion of the moral wilderness beginning to blossom, and, instead of the natural crop of thistles and thorns, rearing trees of righteousness, soon to flourish in a happier land! As we are all bound to have a share in this spiritual husbandry, should we not individually say to ourselves, What have we been doing? Ministers of the Gospel have a great responsibility; for to each of them a large portion of the field to be reclaimed is assigned. It is not all unproductive. Here and there, there are blossoms of hope, and sweet olive plants that need to be watered; and here and there, there are trees, over which the storms of many winters have passed, and which need to be sustained. Should not the spiritual labourer go often to see whether the vine flourish—whether the tender grape appear, and the pomegranate bud forth—whether the fig tree put forth her green figs, and the vine with the tender grape give a good smell? But, alas! when he looks for vines, and fig trees, and pomegranates, how often does he find only crab-trees and wild olives, yielding, instead of mellow fruit, nothing but what is sour, unsavoury, and unwholesome! Up, then, and be doing, thou servant of the Lord! *Thou* canst not change their nature, but thou canst bud, and ingraft, and dig, and water, under the directions

of the great spiritual Husbandman, who is ready, in answer to thy prayers, to prosper the work of thy hand, and to render it successful. And should not every parent likewise be up and active? The field assigned to him may be small, but is it not precious? and should he not most earnestly desire that it may be as a field which the Lord has blessed—watered, as the garden of the Lord, with wells of living water, and streams from Lebanon—every olive plant grafted and fruitful, and every vine branch from the right stock, and already laden with purple clusters?

We took a walk in the forenoon towards the southern extremity of the Bay; but it yielded nothing except the pleasure of the walk. The time has been, when the ground over which we passed must have been five fathoms under water; for, in the wooded bank at this place, about thirty feet above the present sea-level, there is a deposit of post-tertiary marine shells; and I have been told that there is opposite to it, on the Holy Isle, a corresponding deposit. A great treat awaited us in the afternoon. We learned, that the fisherman of late has been in the habit of dredging in the Bay for scallop (*Pecten opercularis*),\* to be used as bait; and we had hired his boat and dredging apparatus. There is nothing so delightful to naturalists at all acquainted with the wonders of the deep, as a dredging expedition; for it brings within their reach much that they could not otherwise expect to see. We were disappointed on finding

\* They are better known in Scotland under the name of *clams*.

that the larger boat was under repair; and as the small boat would have been unsafe with seven aboard, we set the females ashore on the Holy Isle, with instructions to visit ST. MOLIOS' Cave, while we were carrying on the dredging operations. While rowing to the dredging ground, we looked with delight around us. Seaward, our view was bounded by the Holy Isle; landward, we had not only the hills and glens around Lamlash, but, towering above these humbler heights, we saw Goatfell and the adjoining cliffs, forming a noble background of rugged grandeur. The Bay itself, smooth as glass, reflecting, as in a mirror, the surrounding scene, gave us not only mountains rising to the sky, but similar peaks descending into the deep recesses of the sea. But we were about to explore these recesses for something else than mountain shadows. Accordingly, the dredging began, and the first haul brought up some dozens of scallops. The scallops (or *Pectens*) are a beautiful tribe, and both the shell and its inhabitant show forth the praises of the Lord. Are any disposed to think the scallop must lead a joyless life, lying inert in the dungeons of the deep? The *Pecten*, let me tell them, is a happy, active creature. It can raise itself to the surface, and though unaided by fins, can skim cleverly through the waves. I have seen a little fleet of them skipping about most merrily, as if engaged in some frolicsome dance. On watching their zig-zag evolutions, I found that their valves were to them in the water what wings are to a bird in the air. Every time they opened and shut their

valves, they were rapidly propelled several yards, and they had only to repeat the operation and their sportive movement was continued. Others may say: "What a pity, poor things, that they are blind!" Your pity is again misplaced. You are happy in having two eyes, and will you pity the scallop which has three dozen? Look at it when it opens its shell. See you a circle of beads around the margin of its body, both in the upper and under valves? These pretty beads are sparkling eyes; so that He who made it, and made it to be happy, left it not to grope its way in darkness, either in the mazes of the dance or when engaged in searching for food at the bottom of the sea. But we were in search of something rarer than scallops, and now for the result.

Though at one haul we had got abundance of scallops or clams, it was not for the clams that we much cared, but for their parasitical accompaniments. Accordingly, we scraped off, with great care, what few would have thought deserving of the smallest notice; for though, in the huddled state in which they adhered to the shell on being removed from the water, we could not precisely say what they were, we were sure that they were well worth attending to. We were not disappointed. On floating them in fresh water, on our return to the shore, we found that we had got several species of rare and beautiful algæ. There were some small, but very fine specimens of *Laurencia dasyphylla*. There were four most beautiful species of *Calithamnion*—*C. plumula*, *C. byssuoides*, *C. gracillimum*, and *C. pedicellatum*.



There were also specimens of *Bonnemaisonia asparagoides*, deriving its specific name from its resemblance to a branch of asparagus, though, instead of being green, it is pink. There were, besides, some specimens of *Griffithsia corallina*—a beautiful plant, which we had not before met with in the west of Scotland. It has been named *Griffithsia* as a tribute of respect to a worthy English lady, highly deserving of the honour, whom we sometimes denominate the Queen of Algologists.\*

These beautiful algæ were not the only parasites on the scallop shells. There was something more conspicuous, as it was about four inches in length, but certainly it did not seem more attractive. It was like a *drookit* white feather. But place it again in the water, and what does it become? It has recovered from its state of collapse, and, though still like a feather, it is one of great beauty and elegance. It is *Plumularia pinnata*—a zoophyte; for we have risen in the scale of being, and have now got among living creatures. You would not think that that beautiful white feather had life; but it is only the habitations that you see. The alarmed inhabitants have fled into their houses. But place the polypidom, as it is called, in a tumbler of sea-water, and when the alarm is over, the inhabitants will again appear. The polypes are hydra-form, and spread forth many tentacula in search of food, which they greedily grasp. The feather is formed of calcareous matter, mixed with gelatine, to give it flexibility, so that it may the

\* Mrs. Griffiths, Torquay.

better stand the buffeting of the waves. Observe the stem or quill of the feather, and you will see that it is full of red matter. That is the medullary pulp. Every plumule of the feather is a street. Even with the naked eye you may observe on each plumule about a dozen notches or denticles. Each of these is the house or *cell*, as it is called, of a polype; so that, in a good specimen, we see a kind of marine village, which, under the teaching of God, has been beautifully constructed by the thousand inhabitants which it contains.

Along with this, we got some specimens of a kindred zoophyte, of great beauty—*Plumularia Catharina*; specifically so named in honour of a highly accomplished lady,\* to whom natural history is under great obligations. Neither of these had been got by us in the west before. There were several other pretty zoophytes, which some will thank me for passing over unnamed. I may, however, mention that on the frond of *Laminaria* I got several good specimens of *Lepralia annulata*—a zoophyte which was new to Britain when I found it on the Ayrshire coast some years ago.

Every haul of the dredge brought us up something to increase the variety. There were several kinds of star-fishes—such as *Uraster glacialis* (spiny cross-fish); *Goniaster Templetoni* (Templeton's cushion-star—rare); and many others which I shall pass over,

\* Mrs. Catharine Johnston, Berwick-upon-Tweed, to whom her husband, Dr. George Johnston, is indebted for all the drawings, and many of the engravings, in his valuable works.

that I may attempt to describe one of surpassing beauty, not got on the west coast of Scotland, I believe, since the days of our distinguished zoologist, Pennant. This is *Comatula rosacea*, or the feather-star. It is one which, even in dredging, a person who does not know it is apt to pass over. It has no beauty when entangled among the roots of *Laminaria*. Fortunately, however, I took the trouble of disentangling it, and great was my delight when, having cast it into a tumbler of sea-water, I saw it spreading itself out in all its beauty. Could I place before you Professor Forbes' fine figure of it, you could not help admiring it. If you saw a fine little scarlet ostrich feather in the water, waving with life, you would say: "What a beautiful object!" How much stronger would be your expressions of admiration if, from the disc, or body in the centre, you saw proceeding some twenty or thirty of these scarlet plumes, instinct with life, and exhibiting the most graceful evolutions! What gives greater interest to it is, that in its young state this scarlet feather-star is mounted on a stem, and then it is the representative of a tribe of marine animals now rare, but which, in an early period of the world's history, must have been very common, viz., encrinites, or stone-lilies; for their stems are abundant in almost every limestone quarry, and their detached joints are well known under the name of St. Cuthbert's beads. These ancient encrinites must have been giants compared with those of the present day; but great, and numerous, and lively as they once were, they now lie en-

tombed in the calcareous mud, hardened into limestone, and elevated by some great convulsion from the bottom of the sea. And numerous and mighty as the human inhabitants at present on the face of the earth may appear in their own eyes, the time is fast approaching when the all-devouring grave shall have closed upon them, and the place that now knows them shall know them no more.

But leaving the star-fishes, we came to a kindred tribe—the sea-urchins. Besides the common one (*Echinus sphæra*), and a less common one (*Echinus miliaris*), we got one which is certainly very rare in the west of Scotland, for I had never got it before, viz., *Spatangus purpureus*. Every person knows the common one found so abundantly on the shore, stripped of its spines, and called the sea-egg. The spines of the common one are a yellowish-white colour. Those on the back and sides are hair-like, and pointed. Those on the under part of the body are spoon-shaped, and are employed as shovels. The wisdom and goodness of God are very evident in the formation of these spines, so well fitted for burrowing. I remember placing one, which had been dug up, on wet sand. It seemed to be motionless; but I soon found that the spoon-shaped spines were busily at work beneath, shovelling the sand from under it, so that it was sinking in the sand, while the long sharp upper ones were soon as busily employed in spreading the loose sand over it. The purple-heart-urchin which we now found, is larger and handsomer than the common one. It is of a deep purple colour,

with pale spines. Some of the spines on the back are very long, corresponding well with the figure of it given in Professor Forbes' History of British Star-Fishes, &c. It was gratifying to find on it a few specimens of *Montacuta substriata*, which is well known to be parasitical on the purple-heart-urchin. This beautiful little bivalve was an addition to my cabinet of shells, as I had never seen it before. Why it chooses to nestle among the spines of the purple-heart-urchin I cannot tell; but undoubtedly there is some good reason.

It would exhaust the patience of my readers were I to enumerate the rare and beautiful shells we found. They are, however, objects of great interest; and both the shells and their inhabitants, whether great or small, are well fitted to show forth the wonderful wisdom and goodness of the Lord. As above a hundred species were found now and on a former occasion, and as many of them were rare, I shall not venture even to make a selection. A complete list of them, however, shall be subjoined in the appendix.

But some of our readers, who like to hear of what can be turned to good account, may perhaps say, "Got you no fish when you were dredging?" Yes; I am happy to say we did get one fish—and that one was new to Scotland.\* "What was it, pray?" It was *Lepidogaster bimaculatus*! But long though the

\* Since I wrote the above, I have received a letter from William Thompson, Esq., Belfast, to whom I had sent the little fish, that there might be no mistake in my statement as to the species. He says: "*Lepidogaster bimaculatus*—certain. I had it before, if memory fails not, from the Scottish coast; but 'tis a species only

name be, I must own that the fish itself is not quite so long and large as a whale; so that our Scottish fishermen need not expect any additional hogsheads of blubber. Nay, it is not even so long as a haddock; so that the table will not groan under it when served up. "How long was it, then?" It was (for it was full-grown)—it was . . . . nearly . . . . an inch and a-half in length! But though it may not furnish much nourishment for the body, it is our own fault if it yield not some food for the mind. It has an organ to be found in few of our British fishes; that is, a *sucker*, by which it can firmly adhere to other bodies. In general, this adhesive apparatus is on the under surface of the body. In one, however, it is on the crown of the head, and by this it has been found adhering to the haddock. God gives no organ in vain. It is probable, however, that this adhesive apparatus is for more purposes than we yet know of. But we see that it may be useful for support and for protection. The *Remora*, which has the sucker on the upper part of the head, has been found adhering to another fish; and it is thus wafted through the waves without any expenditure of its own strength. Others of them cling by it to rocks and stones; and this may afford protection, and may save them from being dashed to pieces in the storm. There is one kind,

to be had by dredging, and consequently known to very few. The *L. Cornubiensis* is littoral, at least on the coast of Clare, where I took it between tide marks." I may add, that it is littoral also at the Mull of Galloway, where it was taken by the Rev. Mr. Lamb, the worthy Free Church minister at Maid<sup>en</sup>kirk.

called the *Lump sucker*, which, from its size and clumsiness, might be very apt to suffer in stormy seas, were not its power of adhesion very great. Pennant mentions, "that on placing a fish of this kind in a pail of water, it fixed itself so firmly to the bottom, that on taking it by the tail, the whole pail by that means was lifted up, though it contained some gallons, and that without removing the fish from its hold." Small, then, though the *Bimaculated sucker* is, which we found on this occasion, is it not well fitted to teach us a lesson of wisdom? Often is the believer placed, as it were, in troubled seas; but there is a rock which no storm can move. That rock is Christ. The little fish may be driven from its hold, and may perish in the storm; but let the believer, in the exercise of faith, cling to Christ, and he is perfectly safe in the greatest tempest; for not only has he a hold of Christ, but Christ keeps fast hold of him, and no power in heaven, or earth, or hell, can pluck the believer out of the Redeemer's hand.

## CHAPTER X.

The Holy Isle—Its height—Its vegetable productions—Geological features—The subtle serpent—St. Molios' Cave—History of religion in Arran learned from its antiquities—Arrival of St. Molios in Arran—His success—Popery gains the ascendancy—Pre-lacy—More dredging—Shells found—Hermit crab—Its history—Treaty of union with spotted sea-anemone—Union is happiness and strength.

As in my last communication I stated that, from the smallness of our craft, we had been constrained to set part of our boating company ashore, and as I took no further notice of them, some may suspect that we left them to shift for themselves in a barren, and at that time, I believe, an uninhabited island.\* In justice to ourselves we must render an account. On landing them at the pier, I told them that they might either climb the hill or walk southward along the shore, and visit, if they chose, St. Molios' Cave. They chose the walk by the shore. Neither of the walks would have been new to me. I have both circumnavigated and circumambulated the isle, and

\* The only house on the isle is the occasional residence of James Oswald, Esq., M.P. He has erected a nice wooden pier near his house.



I have been more than once at its summit; but the years that have since fled have carried away with them the remembrance of much that I saw and felt. As the conical isle is about one thousand feet in height, the view from the top, of the mainland on one side, and of Arran on the other, is very magnificent. The only plants that I remember are *Pyrola minor*, found among the heath in ascending from the north; and abundance of *Arbutus uva-ursi*, covering with its trailing branches a great extent of the southern descent. It has a fine appearance, the scarlet berries contrasting so well with its dark ever-green leaves. The berries are tempting to the eye; but they are of an austere taste. So think not the moor-fowl, whose favourite food they seem to be, and many a fine repast they must furnish. God has other creatures besides man to provide for; and where provision has been made for them, there they take up their abode. The grouse and black-game which abound in Arran, know well where juniper-berries, craw-berries, blae-berries, and the bear-berries of the *Arbutus uva-ursi*, are to be found. When Arran was richly wooded, as it continued to be in the end of the sixteenth century, we are told that it was one of the favourite resorts of the capercailzie, or cock of the woods. The forests perished, and the capercailzie disappeared. His Grace the Duke of Hamilton is trying to re-establish them in their ancient place of resort; but the attempt is premature. Arran must again be, partially at least, covered with woods, ere the capercailzie will be tempted to abide in it. By

putting the eggs of this bird, large as a turkey, into the nests of the grouse, on the mountain-side, many of them have been hatched; but when reared, they either die or make their escape. A few weeks ago, I heard of one of the game-keepers returning with a stray one which he had captured in the Lowlands, where it had probably been in search of fir-woods, in which they find suitable nourishment.

In "An Original Survey of the Geology of the Island of Arran, by Andrew C. Ramsay, Esq.," which led to his being placed at the head, in Scotland, of the great national geological survey which is now going on, we are informed that the coast of Lamlash Bay is composed of red sandstone, intersected by numerous dykes. Three of these are of claystone, and eleven of greenstone. "The dependency of Holy Isle does not differ in structure from the southern district of Arran; presenting the common red sandstone occasionally visible on the shore, overflowed by a great mass of claystone, and claystone porphyry, to the height of about one thousand feet. In the south-eastern district, veins of trap may be seen penetrating the sandstone horizontally." Much of the porphyry is the variety called clinkstone porphyry, which here ranges itself in rude columns, placed over each other, and resting on the red sandstone.

As our young wanderers, instead of climbing among clinkstone rocks, went along the shore in the direction of St. Molios' Cave, we shall follow them. They had not proceeded far till Isabella, having got the start of the other two, had nearly stepped on a grisly

native of the island, in the form of a large venomous adder.

“ Obstupuit, retroque pedem cum voce repressit :  
Anguem, . . . trepidaque repente refugit,\*  
Attollentem iras, et cœrula colla tumentem.”

Without waiting to spout Latin—wiser on this occasion than our first mother Eve—she took to flight, and brought up her sisters as a reinforcement; but the subtle serpent, not choosing to abide the encounter, had glided away to some safe lurking-place among the heather.

The Cave of St. Molios (pronounced *Molees*) is on the upper side of the path which winds along the shore on the western side of the isle. I have repeatedly visited, and with considerable interest examined, this cave; but as several years have since intervened, instead of trusting to my memory, I shall quote from the New Statistical Account of Scotland. It is therein stated that St. Molios, or, as the name means in Gaelic, the shaved or bare-headed servant of Jesus, being a disciple of St. Columba, came from Iona, and took up his residence “ in this lonely isle, whence he diffused the light of Christianity among the formerly Pagan inhabitants of Arran. The cave which formed his residence, is merely an excavation in the red sandstone, hollowed out by the sea when its level was higher than at present, with its mouth defended by a wall of loose stones. On the roof of the cave there is a Runic inscription, stating the name and office of the saint; and a little raised above its floor, a shelf of

\* I beg Virgil's pardon for spoiling one of his noble lines.

rock, said to have been his bed. In the neighbourhood of the cave there is a large flat stone, called his dining-table, and a spring of pure water (his bath), much resorted to in the ages of superstition, and celebrated for the healing virtues alleged to have been communicated to it by the prayers and blessings of the saint."

The Lord has been good and kind to Scotland. With the exception of Judea, there is no other land on the face of the earth the religious history of which is so deeply interesting. Even within the boundaries of Arran there are vestiges by which we can trace some of the great religious changes which have taken place in our land. Time has spread his dark wing over the state of the inhabitants of this island before the introduction of Christianity. Pagans they were, undoubtedly; but whether they were Druids, or worshippers of the imaginary gods of Scandinavia, is matter of uncertainty. Some think that the circles of stone found in several places of Arran are the remains of Druidical temples. At Tormore, for instance, the large trunks of oak trees still imbedded in the surrounding moss, are evidently the remains of a forest, and as the Druids worshipped in oak forests, it is thought by many that the remarkable circles at Tormore are the remains of one of their great temples. A well-worn perforation in the side of one of the stones was pointed out to me as the hole through which the cord went that bound the victim when brought to the altar; though some of the Highlanders say that it was here that Fingal fastened his stag-hound, Bran. It must

have been for some important purpose that these circles were formed. Near these circles there are three upright columns of stone, about fifteen feet in height, and eleven or twelve feet in circumference. From the top of one of them I, with some difficulty, brought down a fine large specimen of the lichen, called *Ramalina scopulorum*, which I still have in my possession. The stones are old red sandstone; and making allowance for what is under ground, they cannot be less than twenty feet in length. It would be no easy task, even in the present day, with all the progress we think we have made in the arts and sciences, to bring stones of such magnitude to this place, and to erect them so as that they would stand for many ages. The great uncertainty as to the purpose for which these were erected, and our utter ignorance of the name even of one of those who must have exulted in their erection, as an achievement well fitted to hand down their names to posterity, is humbling to the vanity of man. “Let us build us a city, and a tower whose top may reach unto heaven; and let us make us a name, lest we be scattered abroad upon the face of the whole earth,” said the impious builders of Babel. “But the Lord scattered them abroad from thence upon the face of all the earth;” their unfinished tower has crumbled—they soon returned to the dust; and though they are held up to posterity, it is as vain shadows, unworthy even of “a name.”

But whatever uncertainty there may be in some things, there is the melancholy certainty that when St. Molios arrived in Arran, the natives were be-

nighted Heathens. He was the disciple of a man of God of apostolic character, St. Columba, who, in the year 563, landed in Iona, which he had received in a gift from the King of Argyle, and which he made his chief place of residence. By making excursions himself, and by sending forth his disciples to preach the Gospel—God blessing their labours—a great and rapid change took place; for it is said that before his death the whole of Scotland was converted to Christianity. St. Molios being sent to Arran, engaged, it would appear, with ardour and success in the work of his mission. The Holy Isle, it is probable, was only a place of occasional retirement for meditation and prayer. All who have been very successful in converting souls have not only been zealous and ardent in preaching the Word, but frequent, and fervent, and instant in prayer. After devout converse with God, when they returned to the work, their faces shone, their hearts glowed, their words burned, and their tongues delighted to speak of Jesus, and to proclaim the wonders of divine love. St. Columba, it would appear, came to encourage his devoted disciple; for a moss-covered cairn in the west of the Island of Arran is pointed out as the spot where St. Columba sat down with St. Molios to refresh himself when travelling from place to place evangelizing its heathen inhabitants. St. Molios afterwards made Shiskin his chief residence, and there he died, at the advanced age of one hundred and twenty years.\*

Blessed was the change that took place when the

\* New Statistical Account.

darkness of Heathenism fled before the light of the Gospel; but the remains of a monastery lately to be seen near the landing-place in the Holy Isle, remind us that in process of time that light was greatly obscured. Scotland withstood the progress of Popery much longer than England did. The doctrines of the Gospel preached in their purity by St. Columba and his disciples, and beautifully reduced to practice in the lives of these holy men, told on the understanding and the hearts of those among whom they laboured; and the successors of these pious teachers being men of kindred spirit, our blessed religion, in an outward form nearly allied to Presbyterianism, took deep root and flourished for several centuries in Scotland. It was not till the twelfth century that the usurpations of Rome were in any degree successful. Popery then began to be countenanced at court, and, under several successive monarchs, it continued stealthily to creep in, till, having risen to power, it tore off the mask, and brought all under seeming subjection. Even then, however, the Lord had his hidden ones in our land; and soon after this we hear of the Lollards of Kyle—the forerunners of the Reformation. It would lead us much too far from our present purpose to speak of the downfall of Popery at the blessed Reformation;—of its partial rise afterwards, in the form of black, persecuting Prelacy, when the whole land was made a scene of desolation, and the heath on the wild mountain-side was often changed into a deeper purple, by the blood of the saints, shed for the Word of God, and for the testi-

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mony of Jesus Christ. Neither must we speak of the blessings of the Revolution period, and of the spread of the Gospel, till a race arose regardless of Gospel blessings, living carelessly and at ease in Zion. As little may we wait to mourn over the long reign of spiritual deadness. Let us, however, express our joy that better days have at last come. A chapter has been added to the wonderful history of the Church of our fathers, which posterity will not blush to read. But let us remember that the signs of the times, and the more sure light of prophecy, speak of the approach of still more wonderful times, and still more wonderful events. God has already done great things for us, whereof we are glad; but if our gladness be holy joy, it will lead us to show our gratitude by being up and active in God's service; grudging no labour—sparing no arrows—girding on the whole armour of God, that in the evil day we may quit ourselves like men, being strong in the Lord and in the power of his might; so that when the shout is raised, "Babylon is fallen—is fallen—is fallen!" we may lift up our heads and rejoice with exceeding great joy.

After our ejected party returned to the boat, as the evening was very fine we ventured on one haul of the dredge, that they might not be altogether deprived of the pleasure we had enjoyed. We got some more *Pectens* with interesting parasites; *Fusus corneus*; and what is much rarer, *Fusus purpureus*; *Trachus tumidus*, and *T. cinereus*; *Hiatella præcisa*; *Anomia undulata*, and an *Anomia* that does not tally with any



one described by my scientific friend, Professor Fleming, in his "British Animals." It comes nearest to his description of *A. cylindrica*, only that it is not in the least cylindrical. It has, however, the rough transverse marks like ribs. I may mention, for the sake of some, that *Anomia* is like a small oyster, with a perforation in the under valve.

We brought up several crabs, one or two of which were new to me; but it is often more generally interesting to dwell on what is common than on what is rare. The hermit crab (*Pagurus Bernhardus*) is common; it may be seen, by every person who makes use of his eyes, on the shore, as it is very often drifted when there is a breeze, and left by the tide on the sand. It is called hermit crab, because it takes possession of an old univalve shell, dwelling in the cavity as in a cell. In its young state, it is often to be found in a little *Trochus* or *Silver Willie*, as the children call it; and when it is full size it ensconces itself in the large *roaring buckie* (*Buccinum undatum*).\* The goodness and wisdom of God are seen in the instincts of animals. The hermit crab is like a little scarlet lobster, whose body and claws are defended by a strong crust, but whose hinder parts have but a thin covering. Knowing this, it thrusts its defenceless parts into the cavity of a shell; and it takes care that the shell be sufficiently large as a place of refuge for the whole hermit in the time of danger. There is a foreign species in which the spirit of the

\* There are several species of *Pagurus*, so that the small ones may not always be the young of the large.

soldier is combined with the seclusiveness of the hermit. It shows ambition, and courage, and pride. It may be seen contending with other free-booters on the shore for the largest shell; and, having obtained the mastery, it proudly parades, with its palace on its back, in the presence of its unsuccessful competitors.

Many naturalists have observed that there seems to be a treaty of union betwixt the hermit crab and the *spotted sea-anemone* (*Actinia maculata*). I lately kept one of these pretty *sea-anemones* for some days in sea-water. It had fastened itself to a little fragment of a screw shell (*Turritella*), but its co-tenant in the inside was not a hermit crab, but a pretty red annelide. Be this as it may, certain it is that, on this occasion, we found that the *spotted anemone* had fastened itself to the outer lip of many of the large *roaring buckies* brought up, and wherever there was an *anemone* without, there we found a hermit within. In all likelihood they in various ways aid each other. The hermit has strong claws, and while he is feasting on the prey he has caught, many spare crumbs may fall to the share of his gentle-looking companion. But soft and gentle-looking though the *anemone* be, she has a hundred hands, and woe to the wandering wight who comes within the reach of one of them, for all the other hands are instantly brought to its aid, and the hermit may soon find that he is more than compensated for the crumbs that fall from his own booty. Union is happiness and strength. "Behold how good and how pleasant it is for brethren to dwell together in unity! It is like the precious ointment

upon the head, that ran down upon the beard, even Aaron's beard: that went down to the skirts of his garments; as the dew of Hermon, and as the dew that descended on the mountains of Zion: for there the Lord commanded the blessing, even life for evermore."

## CHAPTER XI.

Whiting Bay not grand, but sweet—Cows fish-eaters—Trap dykes on the shore—Botanical and zoological walks with Mr. Adam White and Mr. George Gardner—Sea-shells—*Bulla lignaria*—Walk back to Lamash—Free Church tent—Splendid view—Colony of tent-making spiders—The spider teaches wisdom—Taught Robert the Bruce.

THERE is no romance in the name of Whiting Bay; nor has the place itself any of the grandeur of Brodick, Sannox, or Lochranza; yet, as a pleasant residence, it is not inferior to any place in the island. Man has done little for it. It is not divided by trim hedges into regular parallelograms of waving crops. Near to the shore there is not much ground susceptible of cultivation. Even the channel, however, where not reached by the tide, yields a fragrant crop of the little Scotch rose (*Rosa spinosissima*); while the embankment of little rocky hills, close to which the road winds, is adorned with shrubbery of Nature's planting—oak, and birch, and hazel, interspersed with hawthorns, honeysuckles, and trailing brambles; yielding in summer a rich perfume, and in autumn a tempting banquet of hazel nuts and jet-black bramble-berries. In spring, also, there is great

sweetness and beauty; for the banks of every little rivulet that leaps among the rocks is bestudded with primroses, while every little glade of the copse presents a rich blow of wild hyacinth and of wood-anemone. Here there is still that sweet seclusiveness which some may now desiderate amidst the gaiety of Brodick; while the outward or homeward bound vessels, which are constantly passing near to the shore, remind you that you are not far from a busy, bustling world. Or if you wish to forget the bustle of the world—amid the deep recesses of the adjoining glen you may wander for hours with few tokens of living companionship, except the merry chirrup of the grasshopper, the sweet song of the feathered tribes, and the playful frisking of the lambs in their sportive gambols on the grassy slopes of the glen side. Happy he who, in such situations, is “never less alone than when alone.” Happy they who, in Nature’s solitudes, can trace the footsteps, and mark the handiwork of a benignant God—who, apart from the world, can hold converse with the Eternal, and rejoice in his promise of a purchased inheritance, where the Lamb shall lead them to fountains of living waters, and God shall wipe away all tears from their eyes.

The day on which we visited Whiting Bay was a delightful one; but as it was too hot for a long walk, we engaged a conveyance, which not arriving at the appointed time, part of the forenoon was lost; and after we reached Whiting Bay, some more of our time was occupied in visiting our old friends. A family from Port-Glasgow were the temporary occu-

pants of one of the houses where we called. The greater part of them were at the time in a boat in the bay, wishing to bring ashore with them a fresh supply of fish. The fine whittings they had caught the day before had been nicely split up and placed on a board in the sun; but, when they were just about ready to be sent as a present to their friends, the cows coming round, devoured them all in a twinkling. We knew, however, before this, to our cost, that Highland cows are decided fish-eaters. This need not surprise us, when we know that the Arabs often feed their favourite horses with dried fish.

The geologist will not regard without interest the numerous trap dykes of various width that traverse the coast at Whiting Bay, some of which intersect each other. The new red sandstone in contact with these dykes is often greatly indurated. Towards King's-cross-point, the rocks assume somewhat of a columnar aspect. This is the case also at the magnificent cascade at the head of Glen Ashdale, where the greenstone cliffs which overlie the sandstone are imperfect columns.

As the hours spent at Whiting Bay on this occasion did not yield much recordable matter, I shall fall back on the reminiscences of former years. In August 1842, I spent several days there; and had more leisure for research. I was then visited by two distinguished naturalists—Mr. Adam White of the British Museum, and Mr. George Gardner, who had newly returned from Brazil, and who is now exploring the rich recesses of Ceylon. I had been initiated

by him in the study of muscology before he went out to South America; and he now entered on botanical research in a Highland glen with as much zeal as if he had never explored the untrodden heights and depths of a foreign country. We searched in vain the hazel copses of Knockingelly for *Epipactis ensifolia*—a rare and beautiful plant. I had often seen it in that locality; but the flowering season was over, and it had died down. Neither could I find *Thalictrum flavum* (meadow rue), which, years before, I had seen at Largiemore. Nor could we discover any remains of *Typha latifolia* (great cat's tail), which once grew abundantly in the mill-dam. This is an interesting plant, rendered very conspicuous by its long black catkins. In Canada, where it is much more common, the fine black down on its long cylindrical head is plucked off and used in beds instead of feathers; and I doubt not that it would make a very comfortable couch.

The most delightful part of our ramble was up Glen Ashdale, being sweetly secluded, especially in the neighbourhood of the water-fall, which is the finest in Arran. There we got some good mosses—the rarest of which were *Hookeria lucens*, and *Funaria Muhlenbergii*, both of which I had before got on the cliffs betwixt Catacol and Lochranza. I was not a little pleased to observe, on the steep bank which overhangs the water-fall, a striking instance of the instinctive search of plants after food and support. A young alder tree had grown on a little projection of the declivity, where the earth underneath had on

one side crumbled away. It had struck its roots into the bank above; but on the side of the projection fronting the water-fall, there was an empty space of about five feet; so that on this side, for want of roots, there was a lack both of nourishment and support. Even though it had grown in spite of the scanty supply, it must have brought down the projecting bank by its increasing weight. The tree had evidently felt how critical the circumstances were in which it was placed; and it was doing its utmost to procure food and to avert the threatened ruin. It had pushed roots straight downwards like leafless, fibreless rods: they were already within half a foot of the bank below; and each rod was beginning to divide and spread in the form of roots, that, striking into the earth, they might not only derive nourishment from the soil, but might form supporting pillars to the tree, on which it would be borne up, even though the earthy ledge on which it had grown should altogether crumble away. Hoare, in his *Treatise on the Vine*, mentions that a bone being placed in the strong clay of a vine-border, the vine sent out a leading or tap-root through the stiff clay, till it reached the bone. In its passage through the clay, this main root threw out no fibres; but when it reached the bone, it went no farther, but gradually covered the bone with delicate fibres like lace, each fibre entering a pore, and sucking out the luscious nourishment. He who formed the alder and the vine taught the one instinctively to cast forth its roots for distant food, and the other to strike its tap-roots downwards through empty space, to



form pillars of support, and also to draw up additional nourishment. He offers to us angels' food for spiritual nourishment; and while he tells us of approaching danger, in which every earthly prop shall fail, he points out to us a Rock on which we may with safety lean, amidst the war of elements and the wreck of worlds!

Mr. White took with him to London a well-filled *vasculum* of Arran plants; but he was more intent on insects, and on the living productions of the sea. Arran is a very rich field for the entomologist.\* He carried with him to London, for the British Museum, some good zoophytes, found on stones, and shells, and sea-weeds; also a variety of *Echinus lividus*, found in pools among the trap dykes. I found, while at Whiting Bay, some good specimens of the branched variety of *Antennularia*, and what I prized much more, *Plumularia myriophyllum*, or the pheasant's tail coralline. What rendered the specimen peculiarly valuable was, that it was enriched with vesicles, and the only instance in which the vesicles of this zoophyte have been observed. It attracted the attention of the fisherman, who brought it home to his wife; and she being a person of taste, admired it still more than her hus-

\* A specimen of *Hipparchia Ligea*, the Arran brown butterfly, a real native of the island, would bring five guineas in the London market. I have a fine specimen of this rare butterfly; but it was taken, not in Arran, but by my lamented friend the late Dr. James Connel of Glasgow, in crossing the Alps, to the no small astonishment of his fellow-passengers in the *diligence*, when they saw a grave-looking gentleman chasing a butterfly!

band did. With all due care she planted it in an old tea-pot, filled with earth; and watering it with fresh-water every morning, she had the satisfaction of thinking that it grew a little larger under her judicious management!

Some time after this, an intelligent fisherman brought me something that was quite new to me. He had got it on his long lines in the deep sea betwixt Arran and the Ayrshire coast. I immediately plunged it into a jar of sea-water. After some time it began imperceptibly to expand. At length rows of polypes pushed out their heads and unfolded their beautifully-ciliated tentacula. I then knew that it was a zoophyte, and suspecting that it was *Pennatula phosphorea*, I turned up the figure and read the description of it in my friend Dr. Johnston's excellent work on British Zoophytes; and I was glad to find that it completely corresponded with both. Fishermen call it Cock's-comb, and it is not unlike the scarlet head-gear of that warlike bird. Its more common name among naturalists is *Sea-pen*, which is still more expressive of its form. It was about three inches in length, of a purplish-red colour, except at the top of the stalk, which is of a pale colour, and a little bent upwards. In the evening I took it into a dark room with me, to see whether it merited its specific name. Linnæus speaks of Sea-pens covering the bottom of the sea, and casting such a light, that you may count the shells. I touched it in the water, and tossed it from side to side in the jar, but all remained dark. I then took it

out of the water and gave it a good shake, and it immediately resented the insult by a phosphorescent flash of indignation. I learn, from Professor Fleming's British Animals, that it is not uncommon on the east coast of Scotland. Is it found either in England or Ireland? The only localities mentioned in Dr. Johnston's British Zoophytes, are Scottish. Mr. W. Thompson, in his valuable "Report on the Fauna of Ireland," says, "A specimen once brought to me from Belfast market, was stated to have been found among haddocks sent from Glasgow, and most probably captured on the west coast of Scotland."

Who can be on the shore without admiring the sea-shells? God teaches their inhabitants to form, and fashion, and paint them in a way which man, with all his boasted taste and skill, would in vain attempt to imitate. Let us touch a little on one of them, *Bulla lignaria*, found at Whiting Bay by digging in the sand at ebb-tide. It is not easy to give a description of this elegant univalve. It is oval, convex, and slightly spiral, like a thin plate, pretty closely rolled up at one end, and only half rolled up at the other. Inside it is china-looking, and outside it is like wainscot. It is nearly two inches in length, and at the broadest about an inch and quarter across. Never did lady recline on a more tasteful couch. The internal structure of this well-lodged mollusc is deserving of our regard. As the inhabitant of the *Bulla* is as soft as a slug, one would think that it would feed on something as soft as jelly. Instead of that, it swallows entire the fry of another creature,

with a shell as hard as its own. This shell-fish is *Mactra subtruncata*; called in the Lowlands *Aikens*, and in the Highlands *Murech baan*; *baan* denoting the colour, which is white; and *Murech*, it is probable, being the Celtic origin of the Latin *Murex*, the shell-fish which yielded the Tyrian dye, or imperial purple. But how can the soft *Bulla* feed on this hard food? Though it has no teeth, it has an equivalent—a gizzard formed of shell as hard as bone, and composed of two valves, or rather millstones. These millstones are bound together with a very strong ligament, leaving only an opening to receive the food. As soon as the young shells are swallowed, they come under the power of the two millstones, which crush, and grind, and reduce them and their living contents to paste—in which state they enter the stomach. This stomach is capacious, in the form of a sack of meal bound at the mouth; and in this deep sack the paste remains, till it yields its substance for the nourishment of the voracious *Bulla*. Various are the methods by which the Lord enables his creatures to supply their wants. He has given sharp teeth to fishes and quadrupeds, and hard bills to birds; but though the *Bulla* has neither tusks nor beak, He has furnished it with a gizzard which still better answers its purpose.

After spending an hour or two pleasantly at Whiting Bay on the present occasion, we set out to walk to Lamlash, about five miles distant. The day was lovely, and when we came to the bridge over the rivulet which separates Whiting Bay from King's-

cross district, we could not but seat ourselves on the parapet wall, to listen to the murmuring of the stream amongst the stones, and the sweet warbling of the feathered songsters in the richly tangled copsewood with which the rocky banks of the burn were adorned. It was not the eye nor the ear alone that was feasted. I never saw the hawthorn in greater beauty; and the fragrance sent forth by it and its sweet kindred on this natural rockery, was not inferior to Sabeian odours wafted by the breeze from Araby the Blest. And yet more heavenly music is at times heard, and a sweeter savour at times pervades the glen; for near to this the Free Church tent is placed, reminding one of the days when it was not safe even to pitch a tent, and when under the open canopy of heaven the persecuted remnant worshipped.

“ Fast by such brooks

A little glen is sometimes scooped—a plat  
Amid the heathery wild that all around  
Fatigues the eye: in solitudes like these  
Thy persecuted children, Scotia, foiled  
A tyrant's and a bigot's bloody laws.  
There, leaning on his spear, . . . .  
The lyart veteran heard the Word of God  
By Cameron thundered, or by Renwick poured  
In gentle stream: then rose the song, the loud  
Acclaim of praise; the wheeling plover ceased  
Her plaint, the solitary place was glad,  
And on the distant cairns, the watcher's ear  
Caught doubtfully at times the breeze-borne note.”

After leaving the bridge, the walk for about a mile is without either interest or beauty; but this only prepares a person the better for one of the most mag-

nificent views to be seen, even in Arran. When you have got within a mile and a-half of Lamlash, there is a sudden burst of mingled grandeur and beauty. From this height you have the noble Bay of Lamlash, as it were at your feet; with the Holy Isle, like a great floating cone, guarding its entrance. Beyond the bay you have, in the foreground, Dunphion and other hills of moderate height; and in the background you have Goatfell and the more northern mountains of Arran, as well as the Cumbraes, and Bute, and the Argyleshire mountains terminating the magnificent prospect. Scotia's children may well say, "The lines have fallen to us in pleasant places;" and if they love Him who has granted them many precious privileges, truly they "have a goodly heritage."

When I said there was nothing interesting in the first part of the walk through the King's-cross district, I should have added—except to naturalists; for to them every place furnishes a banquet, and the most unpromising places, to appearance, are often to them the most productive. In passing through this dreary moor at this time, I was on the outlook for an old friend that I had pointed out to Mr. White three years before, as one whose ingenuity I much admired. The Free Church people, in pitching their tent in the neighbourhood, might have done worse than take a lesson from him in tent-making. He had pitched his tent by the way-side. The material of which it was formed was finer than silk, and yet sufficiently strong to stand the pelting of many a storm. The tent consisted of two apartments—a lower and upper storey.

Do you wish to know the name of this ingenious artist? Mr. White would speak of him under his learned or travelling title—*Epeïra*; but he is better known to me under a familiar but ill-favoured name, and therefore I must reluctantly announce him as a large—*spider*! “The spider is in kings’ palaces;” and kings and queens too may learn a lesson from it, and so, surely, may we. Spiders have not got justice done to them: they are a much more interesting race than many suppose. They improve on acquaintance: the better they are known, the more they are admired. Mr. White has studied their history, and has corresponded with the most distinguished arachnologists; and as this Arran tent-maker was a variety of the tribe that he had not met with, I had pleasure in introducing him to his acquaintance.\* At that time a whole colony of them were encamped by the roadside, within the compass of half a mile. As he was rather a gigantic spider, his tent, instead of being on the ground, was elevated, like the house of a giant of whom in early life we have all read. It was built on the tops of the common grass, *Holcus lanatus*, more than a foot above the ground. Had he built his house on the top of one stalk of grass, the house and its inhabitant might have borne down a single slender stalk. But he had contrived to bring together several heads, whose roots stood apart, and, with cordage which he could furnish at will, had bound them firmly together, so that his elevated habitation was anchored on all sides. From whatever *airt* the wind

\* Mr. White has named him *Epeïra Landsburgii*.



blew, it had at once halser and stay. Not only did he bind the heads together, but he bent, doubled, and fastened them down as a thatch roof, under which his habitation was suspended. As he was a larger spider than usual, his house was large. The more capacious apartment, which I believe was the nursery, being below; and the smaller one, which was his observatory or watch-tower, being above, from which he could pounce on his prey, or, in case of hostile attack, could make his escape by a postern gate, so as to conceal himself among the grass.

During my visit in June last, I was anxious, as we returned from Whiting Bay, to ascertain whether this interesting colony of tent-makers was still in a thriving state; and not seeing any at first, I began to fear that a Highland clearance had taken place. When I at last discovered a few of them, I saw that, as there are times of low trade among our industrious two-footed artisans in towns, so are there occasionally hard times among our six-footed operatives in the country. The field in which they encamped had, I suppose, been overstocked. The stately *Holcus* had been eaten down; but these shifty children of the mist had availed themselves of the heather—doubling down the tops of some of the heath-sprigs, and under this thatched canopy forming their suspension-tabernacles. As yet, however, it was too early in the season. The house had only one apartment; the web of which it was formed was as yet thin, so that through it I could see the spider, which being but half grown, had not yet got in perfection its fine tiger-



like markings. "Go to the ant, thou sluggard;" go also to the spider. He who taught the one taught the other; and, learning humility, let both teach thee.

I said that kings might learn of the spider; and one of the greatest of our Scottish kings, some five hundred years ago, disdained not to learn of an Arran spider in the very district in which this spider is found. The tradition still lingers in Arran, that King's-cross-point was so named, because from this point in Arran King Robert the Bruce sailed for Carrick, his own district in Ayrshire. When he was, by a train of adverse circumstances, almost driven to despair, it is said that after a sleepless night, in a humble cot on this rocky point, he in the morning observed from his lowly bed a spider actively employed in weaving her silken web. To make it firm and extensive, she endeavoured to fasten her filmy threads on a beam projecting from the roof, but in attempting to reach this beam she fell down to the ground. Six times she repeated the attempt with no better success, but instead of being discouraged, she made a seventh attempt—reached the wished-for point, fastened her adhesive cords, and went triumphantly on with her work. On observing this, the king sprang up with reviving hopes and fresh resolution. "Shall I," said he, "be more easily discouraged than this reptile? Shall she, in spite of repeated failures, persevere till crowned with success, though her object is to enslave and destroy? and shall I leave anything untried that I may deliver from thralldom my oppressed subjects?" He hastened to the beach, launched a

fishing-boat, sailed from *King's-cross-point* for Ayrshire, which he reached in safety—secretly assembled his liege men in Carrick—made a bold, and sudden, and successful attack on his own castle of Turnberry, which he took from the vanquished English garrison; and, following up this auspicious blow, he advanced on the tide of victory till, at Bannockburn, he drove the cruel invaders from the land, and set once more our beloved Scotland free.

## CHAPTER XII.

Early sail to Brodick—Morning lovely—The prime precious—  
View of the mountain-peaks—Profile—Grandeur and beauty  
of Brodick Bay—Lesson from testy crabs—Brodick Castle—  
Walk towards Corrie—Rare plants by the road-side—Ancient  
sea-cliffs, and water worn caves.

“ Now morn, her rosy steps in the eastern clime  
Advancing, sowed the earth with orient pearl.

. . . . .  
Awake! the morning shines, and the fresh field  
Calls us. We lose the prime, to mark how spring  
Our tender plants, how blows the citron grove;  
What drops the myrrh, and what the balmy reed;  
How nature paints her colours—how the bee  
Sits on the bloom extracting liquid sweet.”

MILTON.

It was now the 13th of June. Our happy week in Arran was drawing fast to a close, and we were resolved that none of it should be lost in sloth. Isabella, one of our family-party, was to leave us this morning by the steamer, to visit friends in Port-Glasgow; and, as we meant to accompany her in the steamer to Brodick, we were all astir by five o'clock in the morning, and ready, after an early breakfast, to go aboard at six o'clock. The morning was most

lovely. How many of those most capable of enjoying it lose, throughout life, all the beauty of this "hour of prime!" It is said that Thomson wrote *in bed* these fine objurgatory lines:—

"Falsely luxurious, will not man awake,  
And, springing from the bed of sloth, enjoy  
The cool, the fragrant, and the silent hour,  
To meditation due and sacred song?"

It may be so; but if the following lines *were* written *in bed*, they are so true to nature that they must have been the transcript of what he had formerly seen in a morning walk:—

"The meek-eyed morn appears, mother of dews,  
At first faint-gleaming in the dappled east;  
Till far o'er ether spreads the widening glow,  
And, from before the lustre of her face,  
White break the clouds away. With quickened step  
Brown night retires; young day pours in apace,  
And opens all the lawny prospect wide.  
The dripping rock, the mountain's misty top,  
Swell on the sight, and brighten with the dawn.  
Blue, through the dusk, the smoking currents shine,  
And from the bladed field the fearful hare  
Limps awkward; while along the forest glade  
The wild-deer trip, and, often turning, gaze  
At early passenger. Music awakes—  
The native voice of undissembled joy—  
And thick around the woodland hymns arise."

Though not one of the seven sleepers, I must own that I am not always a-foot at cock-crowing. The inducement on this occasion was sufficiently strong. The morning was lovely as heart could wish; the scenery was exquisite; and had we had

nothing but the sail to Brodick we would have considered ourselves amply rewarded. The sea was a mirror, reflecting from its bosom the Holy Isle, and the only vessel that, after the late storm, yet lingered in the refuge-yielding loch. Where was the storm now? Is it possible that the smiling sea, murmuring and sporting in softest ripplings on the shore, was lately a scene of strife and turmoil—dashing itself, as if in bitter rage, against the stubborn rocks by which its proud waves were stayed? He who ruleth the winds and waves had said to them, “Peace!” The storm sank into a calm—the waves were still. From the steamer’s deck we could count the pebbles scattered on the sand at some fathoms’ depth, and could see the finny tribes disporting amidst the little marine forests of algæ, gently waving in the ebbing tide.

When the powerful steam began to exert its propelling force, we soon cleared the loch; and, passing Clachland-point, and gliding along the precipitous banks on the left, we had before us another of those fine views which, in endless variety, present themselves in Arran. How magnificent is Goatfell, with the adjoining peaks! Nothing but the hand of the Almighty could have moulded this stupendous scene. Even angels, one would think, might look down with wonder, when so many square miles of granite were pushed up in such rugged grandeur through the firm rocky strata, constrained to yield to this eruptive force. These strata, once horizontal, now incline towards the granite, giving proof of upheaval. By

being indurated and contorted, and closely united to the granite, they show that the granite, at the time of upheaval, must have been intensely heated and in a state of partial fusion, imparting the same degree of fusion to the schist, where they came in contact, so that they form one inseparable mass. They are like two different coloured sticks of sealing wax conjoined when in a state of partial fusion, and firmly adhering, along the longitudinal line of junction, as one body, after they had cooled. In specimens which, in 1842, my excellent friend, the Rev. Dr. Nathaniel Paterson of Glasgow, and I brought down from the steep side of Tornidneon,\* near Lochranza, the schist and granite form one closely united stone; but, though inseparably incorporated in consequence of fusion, the line of junction is distinctly marked by the thorough difference betwixt the two sides of the united fabric.

But let us return to the steamer, on her way to Brodick. From a certain point in our progress, many think that they can trace, in the outline of the mountain tops, a striking profile of Lord Brougham; and if so, well may we say that he has here a monument *cere perennius*—more durable than brass. The thin covering of mist which, for a little, had partially veiled these noble peaks, was now disappearing. All that remained on the lofty shoulder of the mountain were some fleecy cloudlets of white vapour,

\* Tornideón means, I believe, the hill of ptarmigans. Ptarmigans are found there; and the goshawk, I am told, builds in the cliffs, not much to the satisfaction of the gentle ptarmigans—a ready quarry.

adding much to the beauty of the spectacle, as, floating upwards, they were fast evanishing, giving goodly promise of a lovely day.

In few places on this fair earth is there beheld so delightful a mingling of beauty and grandeur as in the near view of Brodick. Grandeur you certainly expect; for these magnificent mountains are seen from afar, and form the greatest ornament of our western coast. But you are not prepared for the remarkable beauty, and sweetness, and softness given by the rich clothing of wood on the mountain skirts, down to water's edge; nor for the fine effect produced by Brodick Castle, rising in ducal grandeur amidst the embowering foliage of many venerable trees; nor for the solemnizing view of the deep-retiring glen, winding along the Rosa, till it seems lost in the embrace of the approximating mountains.

On reaching Brodick, we had leisure, in waiting for the little boat that was to land us on the quay, to contemplate the noble scene—above, and around, and below. I am seldom on the sea; but when there, I am unwilling to pass unnoticed the wonders of the deep. Oh! how full of wonders is that mighty deep! When we see the Lord's wonders in the deep, may they so utter their voice as to teach us to look up unto the heavens for greater wonders there! Some have a great knack at drawing useful lessons from the mute inhabitants of the deep. It was at Brodick that Mr. James Wilson, a distinguished naturalist, observed one morning two men in a boat looking down intently into the water, and from time to time pulling

something rapidly up. His curiosity was excited; and, on inquiring into the nature of their employment, he found that they were fishermen, catching crabs in an ingenious manner. When, through the clear water, they saw a crab at his morning walk, they touched him with a long pole, and instantly the crab grasped the pole with his claws; they gave another pounce, and he grasped more firmly; they gave a harder jog, and, out of all patience, he clasped the pole with all his claws; and forthwith, ere his paroxysm was over, they hastily drew up the pole, and landed him in the bottom of their boat. The moral inference which Mr. Wilson draws, and for which I have mentioned this, is exceedingly good. "I saw from this," said he, "that it was not safe for either crabs or Christians, when exposed to provocation, to lose their temper."

Leaving Isabella, whom we had thus far escorted, to proceed in the steamer, we landed before seven o'clock, having thus fully five hours to dispose of till the arrival of the steamer from Ardrossan, by which we meant to return to Lamlash. We would have visited the Castle at this time, had we not been desirous of reaching the rocks towards Corrie at ebb-tide. The Castle is undergoing repairs, and receiving a considerable addition, part of which is to be in the form of a tower, which, when seen from the bay, will have an excellent effect, in its elevated site, among the surrounding woods. The Castle garden is worth being visited; for, though it contains nothing that is very rare, it is delightful to see the healthy luxuriance



of many rather tender exotics, which brave the winter without any protection, giving good proof of the great mildness of the insular climate. There were some rare mosses at one time on the walls of the Castle; but the improvements that are going on may strip them of their mural treasures. *Parietaria officinalis* may escape, I hope, being of sturdier make than the mosses. This *Pellitory-of-the-wall* I have seen, in the west, only on Brodick Castle-wall, and on a parapet wall at Troon harbour. Its filaments are jointed, and to this peculiarity they owe the elastic property by which, in a hot summer-day, the *pollen* is so copiously discharged. The filaments of the mulberry flower must have some such peculiarity. I remember on a fine summer-day, in passing a mulberry tree in the garden at White House, Lamblash, having my attention attracted by little puffs of powdery vapour bursting, from time to time, from various parts of the tree. I found that it was occasioned by a filament being let loose with an elastic spring, which caused the pollen of the concussed anther to ascend about two inches like smoke, that it might come down like a fertilizing shower on the subjacent pistils, which, as the mulberry is a monœcious plant, are on different flowers from those that have the anthers, and, but for this beautiful contrivance, might not receive the pollen.

Passing the Castle, we proceeded northward towards Corrie. A person does not require to leave the road to find what to many might be more rare than pleasant, viz., poisonous adders, which come out of the wood to bask in the sun. These, I think, have

been reduced in number, since Brodick became so much frequented; for, some years ago, a person could seldom pass along this road on a fine day without seeing an adder, either dead or alive. But the botanist may find, close by the road-side, what is more to his taste—the beautiful little *Pinguicula Lusitanica* (pale butterwort), so much valued in many places that a person, who at times sold as well as bought plants, told me that he laid in a good store of this little inhabitant of the bog every time he was in Arran, and disposed of them to his correspondents at home and abroad, at the rate of half-a-crown the plant. There is another plant very common at Brodick, which, I am told, is greatly prized by foreign botanists, viz., *Brassica Monensis* (Isle of Man cabbage); and what is more beautiful than either—*Lithospermum maritimum* (sea-side gromwell), of which there are splendid tufts on the beach. *Parnassia palustris* (grass of Parnassus), is very frequent here, with its finely fringed nectaries. The three kinds of *Drosera* (sundew) may be found at no great distance, with their singular leaves clothed with viscid, insect-catching glands, sparkling in the sun like brilliant diamonds. Plants acquire an additional value, as memorials of friends with whom, in collecting them, we have made little excursions. Well do I remember with what eagerness I grasped, near this place, a large tuft of a magnificent moss, rare in Scotland—*Splachnum ampullaceum* (flagon-fruited splachnum); and what delight I had in dividing the spoil with my two companions who could appreciate it—Dr. Curdie,

now in Australia, and Dr. Philip MacLaggan, from Edinburgh, now in Canada; still fond of Natural Science, but interested also, I am happy to say, in what is better than Natural Science. And *Erythræa compressa* of Link, found plentifully on the shore, reminded me of the pleasure of meeting the learned and venerable Prussian Professor Link on a memorable day in Arran. Many fine ferns are found on the cliffs which form the ancient boundary of the sea, of which I shall mention only the stately *Osmunda regalis* (the royal fern), and the lowly *Hymenophyllum Wilsoni*, neither of them uncommon in Arran.

In the face of the ancient sea-cliff, extending along this coast, there are a number of water-worn caves, to which Mr. Ramsay in his "Guide" refers, as considered, in connection with the sea-shells found abundantly in the soil, when turned up, even at the entrance of the water-worn caves, as affording proof that the waves once dashed against these cliffs, and formed the caves;—as well as a proof of recent elevation of the sea-beach. "It has also been remarked that these caves dip to the south, agreeably to the inclination of the anticlinal line, their pillars being at right angles to the plane of stratification, not to the horizontal level; proving that their formation by the influence of the waves took place previous to their elevation to their present height."

About this time the young people made what they considered rather an interesting discovery, viz., a Highland cottage at the base of Maoldón, in which milk might be purchased. They had made an early

breakfast, and after sailing five or six miles, they had walked some hours on the shore; and they began to think that, amidst their scientific pursuits, the vulgar employment of eating and drinking might form rather an agreeable interlude. Accordingly, they had some delicious milk along with the biscuits they had brought with them; after which they returned cheerily to the sea-beach. Our chief look-out on getting again among the rocks was for a rare sea-weed—*Codium tomentosum*; and for a rare animal upon it—*Aplysia*, now *Actæon viridis*; both of which we had found about this place a year before; but as we were not successful in finding them on this occasion, I shall have recourse to what I had written respecting them when they were discovered; but this I must reserve as the subject of another chapter.

## CHAPTER XIII.

*Codium tomentosum*—Found near Corrie—*Actæon viridis*, a rare and beautiful mollusc found on it—Described—God's creatures not to be despised, because they may be small—If He adorns and sustains them, will He forget thee, O thou of little faith?

IN a little rocky pool of sea-water near the base of Maoldón, betwixt Brodick and Corrie, I discovered, in July 1844, an alga, which seemed new to me. I laid hold of it, and found it no easy matter to detach it from the rock to which it firmly adhered. It turned out to be *Codium tomentosum*, not rare, I believe, in either England or Ireland, but so rare in Scotland that I have heard of its being found only by Dr. Curdie, in the Island of Gigha, off Kintyre, and by W. Thompson, Esq., Belfast, in a rock-pool near Ballantrae, in Ayrshire. On taking it out of the water, I observed a greenish gelatinous animal on it, which, without examination, I cast into the pool again, that it might continue to enjoy life. I afterwards saw on the *Codium* two more of the same species, but considerably smaller; and observing that they were beautifully mottled with azure spots, I deposited them in my *vasculum*, among the branches of the *Codium*.

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When, on reaching home, I put them into a tumbler of sea-water, I saw that I had got a rare and beautiful mollusc, discovered by Colonel Montagu on the Devonshire coast, and described by him in "The Transactions of the Linnæan Society." These "Transactions" I had not in my possession; but I found as much as answered my purpose in "The History of British Animals," by my philosophical friend, Dr. John Fleming, now, I am happy to say, Professor of Natural Science in the New College, Edinburgh, whose most valuable works should be in the hands of every British naturalist. As I kept the *Actæon* for nearly a week in the tumbler, where it seemed to browse with great satisfaction on the woolly beard of the *Codium*, I had good opportunities of observing it, and I found it even more beautiful than I could have supposed. The excellent description found in the "British Animals" is as follows: "The fore-part of the body is like a common *Limax* ('slug'); tentacula or feelers two, flat, but usually rolled up, and appear like cylindric tubes; at a little distance behind the tentacula, on each side, is a whitish mark, in which is placed a small black eye; the body is depressed, and spreads on each side into a membranaceous fin, but which gradually decreases from thence to the tail. This membranaceous part is considerably amorphous, but is usually turned up on the back, and sometimes meeting, though most times the margins are reflected. This, as well as the back, is of a beautiful grass-green colour, marked on the superior part of the fins or membrane with a few azure spots, dis-

posed in rows; the under part with more numerous but irregular spots of the same. The fore part of the head is bifid; the lip marked by a black margin." With these my observations in general agree. Its colour is green—betwixt grass-green and bottle-green; but in certain lights it has a considerable shade of rich puce-colour on the finest velvet. It is beautifully dotted with azure and with gold. The azure spots are small and numerous on all parts of the body and of the fins, and are precisely of the same brilliant azure as the lines on *Patella pellucida*. The golden spots were confined to the upper parts of the body. They were few in number, but considerably larger and less regular in form than the azure dots. Two of them, for instance, were oblong, and extended from the ear-like tentacula down to the eyes, which were placed on the back of the neck, as if to keep watch against the enemies from behind, while it was busy feeding on the rich pasture afforded by the green *Codium*.

[ The membrane that acts as fins is of the same colour and substance as the body. When the fins are raised and meet above, they give it the appearance of being gibbous on the back. More generally, however, they are a little apart from each other, and in swimming they extend horizontally from the body, and show, at the base of the neck, betwixt the upper part of the fins, a whitish protuberance. At the base of each fin, and pretty close to the back, there could be seen, when the light was favourable, all along the inside, a line like the mid-rib of a leaf; and from

this double mid-rib there proceeded, at intervals, veins in a slanting direction to the upper margin of each fin; so that when the two fins were expanded, it was like a green-veined leaf. To this appearance it may at times owe its safety, by deceiving the eye of prowlers.

The description of the mouth given in the quotation suited my specimens, except that in them the margin of the *upper* lip was black. The lower lip and part of the throat were quite white, and were the only parts that had none of the azure dots. Could I transfer to the printed page a coloured drawing of it by my daughter Margaret, a single glance would give a better idea of it than all my words; though still we would be constrained to say: "Who can paint like nature?"

This brief quotation from the poet of the seasons suggests to us an answer to those who may be ready to say: "What trifling! why such a fuss about a painted sea-slug?" If God painted it, should not we admire it, and adore Him by whom it was arrayed in so much beauty? He made all things for his own glory; and if this tiny mollusc, like a floating emerald, has not before attracted the gaze of any eye in Scotland, this is a reason why we should admire it the more when seen, and give glory to Him who deigned to adorn it. Millions of them may have lived and died unnoticed by man; but as they enjoyed all the happiness of which they were susceptible, they were not created in vain. But they answer a nobler purpose, if they lead up the thoughts of even one human



being to nature's wonder-working God, bringing some small tribute of glory to the benignant Creator, and exciting thoughts which may be remembered with pleasure when the sea and all that is in it have passed away!

God's creatures are not to be despised because they may be small; for by the least of his creatures he can accomplish great and wonderful works. How small are the coral polypes! and yet, under the teaching of God, they can plant the sea with islands, and build reefy walls which ocean's proudest waves cannot demolish! Feeble are the sea-fowls that build their yearly nests on the rocky islands of the distant main; but these feathered tribes are like living clouds or winged legions. Their droppings cover the rocks. Myriads after myriads live and die; and their dead bodies mix with the mass. The work of accumulation for ages goes on. At last it has been discovered that this ornithological deposit of filth and corruption has become a perfect store-house of wealth and fertility. Thousands of our hardy seamen have got employment in transferring it from the ends of the earth; and now it is giving increased productiveness to our soil, a fresher verdure to our fields, and a richer tinge to the golden wavings of our harvests.

If man attend to great operations, he is apt to be engrossed thereby, and to neglect what is small. God neglects nothing. He who made and feeds behemoth and leviathan, also made and feeds this little marine beauty which we have feebly helped to describe. He who streaks the dawn with purple light

—who gives the orient tints of the morning to the eastern sky, and its glorious iridescence to the covenant-bow in the clouds, deigns also to paint the sparkling dew-drop—to give its crimson blush to the fragrant rose, and to clothe in green, and azure, and gold, this delicate little denizen of the deep; and if He so clothe the *green Actæon*, which to-day is, and ere to-morrow may pass away for ever, child of immortality, will He forget thee? If thou look to Him with faith in his Son, He will remember thee with that love which he beareth to his own—he will give thee food to eat and raiment to put on—he will seal thee with the Holy Spirit of promise—he will clothe thee with the robe of righteousness, the garment of salvation; and bringing thee at last to Immanuel's land, He will put a new song into thy mouth, and joy unspeakable and eternal into thy heart, and will bless thee with that rest that remaineth for the people of God!\*

\* Since I wrote the above, I have seen, in the "Annals of Natural History," an excellent and truly scientific paper on the anatomy of the *green Actæon*, by George J. Alliman, Professor of Botany in Trinity College, Dublin.

## CHAPTER XIV.

Corrie visited with mingled feelings—Earthly joys evanescent—Streams from the hills—Junctions of slate and granite in the streams—Limestone quarry at Corrie—Fossils—Boulders at Cromla—Glen-Sannox—Red deer—Blue Rock—Fallen Rocks—Echo—Poor old man—His history.

WE were now advancing towards Corrie. Had our time permitted, gladly would we have lingered about a place for certain reasons very much endeared to me, and which I cannot visit without mingled feelings—those of a mournful kind, however, having the predominance. There, in earlier life, I for a time sojourned with a beloved invalid, brought thither in a state of the greatest weakness, but who, by God's kind blessing on the change of air and scene, returned convalescent, ere many weeks had elapsed, to her Lowland home, of which for years she continued to be, of all created things, the chief light, and joy, and charm. But how evanescent are our earthly joys! How soon the clouds return after the rain! The place that knew her knows her no more. The grave has opened and closed. But has not heaven opened also to receive what cannot die? And is not the grave a quiet resting-place to the bodies of the an-

somed, till, at the voice of Christ, they come forth, no longer frail and mortal, but fashioned like unto Christ's glorious body, to be the everlasting residence of glorified immortal spirits? In revisiting scenes which had been gladdened by the presence of those most dear to us, but who now have no part in all that is done under the sun, we surely should be reminded that we are fast journeying to the house appointed for all living; and surely we should be incited to follow Jesus, that we may be guided by him to his kingdom of glory, there to meet with those with whom we delighted to take sweet counsel on earth, and to share with them in happiness which is inconceivably exquisite, and permanent as the source from which it flows.

“ Friend after friend departs;  
Who hath not lost a friend?  
There is no union here of hearts  
That finds not here an end:  
Were this frail world our final rest,  
Living or dying, none were blest.

“ There is a world above,  
Where parting is unknown—  
A long eternity of love,  
Formed for the good alone:  
And faith beholds the dying here  
Translated to that glorious sphere!”

MONTGOMERY.

The whole coast about Corrie is full of geological interest. In several of the little streams that come down from the mountains, the junction of schist and granite may be seen. In the bed of a stream north

of Maoldon, the junction of slate and granite is very evident. One of the most interesting junctions in the whole island is in the bed of the White Water, which falls into the sea south of Corrie. This stream, no doubt, gets its name from the snowy line of foam which it exhibits after a rainy day, as it dashes down the precipitous mountain side. At the foot of a fine cascade in this stream, if you are not much afraid of being drenched by the spray, you may examine this curious geological phenomenon. The sandstone and granite make so near an approach, that a person is apt at first to think that they are conjoined; but a closer examination shows that a thin strip of slate intervenes betwixt the sandstone and granite. Here we have the close junction of two rocks formed by different agents—the slate by water, and the granite by fire; and it is by the operation of fire that both have been fused so as to be conjoined when in a state of liquidity.

When speaking of Corrie, we must not fail to mention the rich quarry of mountain limestone found there, about twenty feet in thickness, including the alternating beds of red shale. It is wrought in the direction of the dip, and is used in the island, and exported for architectural and agricultural purposes. Carts go along the cavernous passage, to remove the limestone as it is quarried. It is now wrought far into the bowels of the mountain, but I have forgotten how far, though I went to the termination of this subterranean passage. This limestone abounds in fossils, the chief of which are, *Productus Scoticus*,

*Productus giganteus*, *Spirifer striatus*, *Cardium alæforme*, *encrinites*, &c. Several trap dykes penetrate the limestone, and where they come in contact with it, produce considerable induration.

We formerly mentioned water-worn caves in the ancient sea-cliffs, as affording proof that at a comparatively recent period the beach here had been raised. Near the gate of Cromla House, at Corrie, there are two granite boulders, which are regarded as affording additional proof of recent elevation. Mr. Ramsay, in his excellent "Guide," says: "These stones, which are now considerably above the tidal level, rest not on their broad and most solid part, but on their *apices*, as if, while they were within high-water mark, the action of the advancing and retiring waves had washed away the lower part of the rock, and left them when the coast was upheaved to its present height, in the position they now occupy."

Our morning hours were going past apace. Gladly would we have gone on to have a view of Glen Sannox, which may well dispute the palm with Glen Rosa, though the latter is exceedingly magnificent near the head, at a place which, independent of the grandeur of the scenery, should be visited by geologists, on account of a junction there to be seen in the channel of the *burn*. The best view of Glen Sannox is got from an elevated position, such as the deck of a steamer. But he who has thus had a view of it from *without*, will probably not rest satisfied till he has also had a view of it from *within*; and as he moves through this rugged scene of desolate grandeur, in

which there is scarcely the appearance of anything that lives, he may be startled from his reverie by the bold, hoarse note of the heath-cock as he springs from the heather at his feet, or by the loud scream of the eagle as he rises from his eyry in Keirvore, or by the more astounding apparition of a noble red deer starting from his lair amidst the deep heath, and bounding away in antlered majesty. I have known this happen in Glen Sannox. A friend of mine told me that he on one occasion saw thirteen of these stately animals ambling in Indian file along one of the lofty ridges not far from this place. I considered it as no small treat to see even one of these nearly exterminated denizens of these romantic wilds, as he scudded along the sloping side of Glen Iorsa, till, having got beyond bow shot, or the reach of a bullet, he turned and looked down on me with an air of scornful defiance.

Neither would our limited time allow us to go on to the *Fallen Rocks*, a wonderful scene, where an immense projecting cliff of old red sandstone had at some remote period given way, and as it tumbled down the mountain side towards the sea, left along the whole of the declivity great masses of the conglomerate, huddled together in rugged grandeur. Nor could we even venture to approach the *Blue Rock*, willing as we would have been to try the powers of its celebrated echo, which, according to the account of a facetious lady, when spoken to in English responds in native Gaelic. Turn then we must, and scarcely had we turned, till we came up to an old

man, seated on one of the boulders on the shore, whom we recognised as the person we had seen a little before in the cottage where the milk refreshment was obtained. When I entered the house, I had observed him at an early breakfast, and thinking that he was one of the household, I attempted to hold conversation with him; but his answers to what I said were very brief. On coming out, the person who inhabited the house told us that he was a poor man who had seen better days; and before leaving them he was receiving this early repast. He had lodged, I think, with them during the night. Knowing this, I again accosted him as he was resting himself on the stone; and having given him a trifle, I found that he was more communicative. Unfortunately, we cannot often give credit to what is told of their own history by the wandering poor. They are tempted to paint imaginary scenes of calamity to excite our sympathy; and knowing this, the more woful their story, the less we are disposed to believe it. I doubt not that at times we do them injustice; for the cup which they are drinking is often a bitter one, and not always mingled by their own hands. A few days ago a portion of family history was told me by a person of undoubted credit, who knew the truth of the particulars, which, if mentioned by a stranger applying for aid, would probably have been regarded as fictitious. The death of a female of good character, a few days previous, being mentioned to me, it was added, there was something peculiar in her history. She was the mother of fifteen children, only one of



whom survived her. Thirteen of them died in infancy; and it might be said that the day of their death was better than the day of their birth, for there was some malformation about the head, which rendered them what is called *objects*. One lovely girl, free from any such defect, lived till she was about seventeen years of age; and what must have been the grief of her affectionate parents when, at this interesting age, they saw her drooping and pining away, and by rapid consumption brought down to the grave! One healthy daughter, however, still remained—their comfort, we doubt not, for a time. But did she continue to be their comforter? She was married, and it is believed well married; but it had been reported that she had contracted habits of inebriety. The father had gone, it was thought, to visit and counsel her; the mother in his absence was seized with shivering. At first no danger was apprehended; but as her state became more alarming her husband was sent for, and ere he returned, his beloved wife was no more! The old man's history, with whom I then conversed, was mournful, but less uncommon, and I was disposed to think that it was a true one. He told us that he was from the neighbourhood of Inverary—that he had been a shipmaster—that he had had a large family—that one of his sons had been a writer, and another a student of divinity under Dr. M'Gill in Glasgow; but that all his family were dead. That the student had died after a lingering illness of many years; that, to crown his calamities, his vessel had been wrecked; and that having lost his all, and being advanced in

life, he was dependent on charity, and was now on his way to Brodick and Lamlash, in the hope of obtaining some aid from sea-faring men who had known him in former years. I did not learn whether he had become acquainted with Him who is as a hiding-place from the wind and a covert from the tempest. Happy they who have cast their anchor within the veil, and have fled for refuge to the hope set before them in the Gospel.

## CHAPTER XV.

A fleet of *Beroës*—Answer to the question, “What is a *Beroë*?”

Description of *Beroë ovata*—Iridescence in the morning sunbeams—The songs and odours of a Highland glen or mountain side, sweet as those from Araby the Blest—The goodness and mercy of God—We admire and adore Him in his works—The *Beroës* shine by borrowed light—So do God’s children—Some *Beroës* shone not, their track being marked only by a dark shadow—So is it with those human beings who hate light and love darkness.

IN giving an account of what fell under our notice in the way from Brodick to Corrie, I intentionally omitted one discovery, that I might return to it, and speak of it more fully. One of the greatest treats we had in this lovely summer morning’s walk was our falling in with a whole fleet of *Beroës*. And what is a *Beroë*? It is a living creature; and in Professor Fleming’s “British Animals” it is ranked among *Radiata aculephæ*. As astronomers give classical names to planets, and stars, and constellations, from their imaginary resemblance, in some respect, to some person, or animal, or inanimate objects, such as Saturn, Jupiter, Venus, the Ram, the Bull, the Lyre; so naturalists, in imitation of astronomers, often give classical names

to the animals they describe. Now, *Beroë* is mentioned as one of the sea-nymphs by Virgil in the striking fable of *Aristæus* and his bees; and were it justifiable thus, as it were, to honour Heathen mythology, we would say that the name is well chosen; for our *Beroë* corresponds to the description given by Virgil of his sea-maid:—

“Clioque et *Beroë* soror: Oceanitides ambæ,  
Ambæ auro, pictis incinctæ pellibus ambæ.”

“Clio and *Beroë*, from one father both,  
Both girt with gold, and clad in party-coloured cloth.”

This description was still more applicable to another species afterwards found, though this one was at times entitled to it, from the golden iridescence of its hues. The *Beroë* now found was not unknown to me, but it was new to my young companions, who beheld it with much interest. It requires a practised eye readily to detect this fragile diaphanous creature. It is not very rare in the Frith of Clyde; but it must be rare in some of our seas; for a first-rate naturalist, who is acquainted with almost all the creeping creatures, and all the natant beauties of the deep, mentioned to me that it has never been his good fortune to find a *Beroë*; and Dr. Fleming, at the time his “British Animals” was published, seems to have seen but one specimen, though I know that he is now acquainted with five or six species. The first I ever saw was caught in a gauze net by Professor Edward Forbes, when he and I were with Mr. Smith of Jordanhill in his yacht, the *Amethyst*, in the Kyles of Bute. Having thus learned to be on the outlook

for them, I found them afterwards in tranquil creeks at Milport and at Ardrossan. I was going to say that it is one of the most beautiful and interesting of the little inhabitants of the deep; but so many of the dwellers in the deep are beautiful and interesting, that the one under consideration at the time is apt to be regarded as the most attractive. This, however, is not a bulky beauty—not of the Dutch make; for it is only about an inch and a quarter in length, and three-quarters of an inch in diameter; and it is almost as transparent as the limpid element in which it floats. It is, I believe, the *Beroë ovata* of Professor Fleming; and I shall extract part of the description given of it in his “British Animals:” “*Beroë ovata*—The body orbicular, slightly depressed at the summit, and a little protuberant at the base. There were eight vertical bands or ribs extending from the summit to the base. These were narrow, denticulated on the margin, confined to the surface, and of a denser substance than the gelatinous interior. From the central substance of the ribs a number of filaments proceeded, which were lost in the substance of the body. The mouth, or opening at the base, had some appearance of having its margin divided into four lobes. . . . Each rib is furnished with a tube, uniting with it near the middle. I could easily observe the water enter the tube at the summit, pass into the lateral vesicles, and go out at their external openings; and in some cases the motion of the current was reversed,” &c.

Our *Beroë* also was egg-shaped, and divided into

equal compartments by eight longitudinal ribs. It consisted of pellucid gelatine, so that it was like a floating egg of fine crystal. But the most wonderful part of the animal is the tubular ribs through which streams of water flow. They are close set externally, with fine *cilia*, upwards of a hundred on each rib; so that when it wishes to move, these *cilia*, like a thousand paddles, are instantly in a state of the most rapid motion. At first we observed only one, which, lifting cautiously in some water in the hollow of the hand, we dropped into a little rock-pool, where we could better observe its evolutions. We could then inspect, not only its external workmanship, but also its internal machinery; for it was so transparent, that we could see into its very core. Alas for us frail mortals, if our neighbours could see into our hearts! But though *they* cannot, we should not forget that there is One who not only can, but does, search all hearts, and who understands all the imaginations of the thoughts. "He who formed the eye, shall He not see?" He that made the heart, shall He not know all that passes therein? When we reflect on this, well may we humble ourselves in the dust, and cry, "Behold, we are vile; what shall we answer thee?" Lord, be merciful to us sinners; behold us in the face of thine Anointed; blot out our iniquities, and accept us in the Beloved.

Though at first we observed only one solitary *Beroë*, we had not gone far till we found them in abundance. In one little creek there was a flotilla of fifty. What life—what beauty—what happiness, in that little fleet!

Fifty thousand paddles, of exquisite workmanship, were in rapid, noiseless motion, twinkling with all the iridescent beauty of the morning dew. I had not before observed this lovely iridescence; and I ascribed it in part to the more favourable inclination of the sunbeams at this early hour.

“ Now morn, her rosy steps in the Eastern clime  
Advancing, sowed the earth with orient pearl.

Awake! the morning shines, and the fresh field  
Calls us. We lose the prime, to mark how spring  
Our tender plants; how blows the citron grove;  
What drops the myrrh, and what the balmy reed;  
How Nature paints her colours; how the bee  
Sits on the bloom extracting liquid sweet.”

MILTON.

We are no longer in Paradise; we are not the inhabitants of Eastern climes; but we have no cause to murmur. I question whether odours fresh from Araby the Blest were ever more delightful than those wafted by the zephyrs from a blooming bean-field; or whether the rich perfume of citron or cinnamon groves ever surpassed the fragrance arising, after a shower, from a birchen copse, intermingled with hawthorn, and honeysuckle, and sweet-smelling eglantine. Was ever hum of Hyblæan bees happier or more peace-speaking than that which arises from the sunny side of a Highland hill, clothed for miles with wild thyme and purple-blooming heather? Though tropical birds have gayer plumage, can they equal in song our cheerful mavis, our mellow merle, or the happy, heart-fraught hymn of the soaring sky-lark, pouring, as she

soars, a flood of song in at the gates of heaven, and down on the inhabitants of the earth? saying, it may be, to subjacent mortals; "Sit loose to the earth; seek your home in the sky." It is during the hour of prime that the feathered warblers delight to raise their matin song. Were we oftener to hear them in that fresh and tranquil hour, we might be more disposed to rival them by singing, with grateful hearts, songs that were once sung in Zion, and which are still listened to with pleasure by Zion's glorious King.

The morning hour is a precious one for the naturalist, when Nature has, as it were, turned over a fresh leaf of her works. Let him, then, after prayerfully perusing a portion of a better book—the "more sure Word"—sally forth to drink in knowledge fresh from the fountain; and the more that he sees of the Lord's handiwork by flood and by field, the more will he be disposed, if he looks up to him as a Father, to adore him for his kindness, not only to man, but to those numberless creatures, both great and small, with which he has peopled the earth. His kindness towards man is fitted to fill heaven as well as earth with astonishment. He made him but a little lower than the angels; he crowned him with glory and honour; he made him lord of this lower creation. But dark is the second page of the early history of man! How is the gold changed! how has the most fine gold become dim! The children of God have become the slaves of Satan. The inhabitants of paradise were driven out into the world—brought under a curse for the sin of man. And why were not these



proud and ungrateful children of rebellion driven down into the deep abyss of woe? It was because mercy, the loveliest attribute of Deity, hitherto unknown, shone forth in all its benignant brightness. When angels revolted, for reasons not revealed to us, there was no forgiveness; but when man rebelled, the Lord said: "Redeem from going down to the pit; for I have found a ransom." When "the earth said, It is not in me; and when the deep said, It is not in me;" the heavens sent forth their richest treasure. He who has the glory of the heavens veiled his glory, that by his atoning sufferings he might save a multitude whom no man can number of the perishing inhabitants of this earth. "God is in Christ, reconciling the world to himself, not imputing to men their trespasses;" binding them to himself in an everlasting covenant; sealing them with the Holy Spirit of promise; and raising them at last to blessedness, far above their highest wish, and permanent as the source from which it flows. He who can look up to God as his Father and Friend, beholds with greater delight the beauty of creation, and the happiness enjoyed by countless myriads of the inferior animals, however minute many of them may be. Even the beautiful little *Beroë*, which sparkles amidst the waves, is beheld by him with interest and with some degree of affection, when he remembers that his heavenly Father made it, sustains it, and has so adorned it with prismatic radiance, that, like a floating fragment of the covenant-bow, it seems, though mute, expressively to say: "The hand that made *me* is divine."

Our attention was drawn to this little *Beroë* by the occasional iridescence of portions of its body, and particularly of the tiny paddles or *cilia*, sparkling under the rays of the sun. It was the brilliant sun that rendered them radiant. Beautiful as they are, they have no radiance of their own. Their sweet beams are borrowed. Their light comes from on high—from the sun, God's treasure-house of light. Oh! should not we remember that it is only when we reflect the beams of a better sun—the Sun of Righteousness—that we can at all be said to shine? We are all darkness, and walk in darkness, till the day dawns, and the day-star arises, and from the Fountain of light and life, life and light are given to us. “Wherefore, awake, thou that sleepest, and arise from the dead, and Christ shall give thee light.” “Arise, shine; for thy light is come, and the glory of the Lord is risen upon thee.” Let us court the beams of this blessed light; for if we reflect their splendour as we journey through the wilderness, we shall shine as the jewels of Christ's crown in our Father's kingdom above.

Another thing struck me. Though the sun was shining, there were some of the *Beroës* that did not shine. Those that reflected the light from their spangled sides were easily observed; but the others, being nearly the colour of the water in which they floated, would not have been observed by us had it not been for the shadow which, little opaque as they were, was formed on the sand at the bottom. Now, here were beautiful creatures, with organs fitted to

reflect the light, but, somehow, they received not the beams that were illuminating those around them. Is not this the case with many human beings? They may be endowed with noble talents—they may have the form of godliness—they may sit as God's people sit, and may seem to hear as God's people hear; but they hear only with the hearing of the ear—their hearts are on the mountains of vanity, and the Word which to others is the savour of life unto life, is to them the savour of death unto death. Instead of shining for the glory of God and the good of those around them, their path is marked only by darkness. They love not the light; they receive not the things of the Spirit of God, and they walk among sparks of their own kindling. These little *Beroës* were floating on the tide; the first rough wave might have dashed them against a rock, or run them aground on the sand, and then a single beam of the scorching sun would have withered them up for ever. O should not they who are walking in darkness, and spreading darkness, consider that the day is far spent, and that the night is at hand; and that nothing can be more dreadful, when emerging from the valley of the shadow of death, than the wrath of the Lamb, whose benignant smile they are now despising?

## CHAPTER XVI.

Medusæ, commonly called Sea-jellies—Stinging properties known to bathers—A beautiful little one discovered, which had about the same time been discovered and described by Mr. Hugh Miller—Medusæ compared with soap-bubbles—Medusæ remind us of young men and maidens of different descriptions—Describe the different classes—Anecdote.

WHERE is the person who has ever walked on the sea-shore, who has not observed what is commonly called a sea-jelly? These sea-jellies are very much at the mercy of the winds and waves; and after a breeze they are often seen spread on the shore; and as they show no symptoms of life when they are out of the water, many see them without supposing that they ever had life. But when we see them floating in a quiet creek, it is evident that they live, and enjoy the life that God has given them. Their gelatinous body is a flattish hemisphere; and they move through the waves by gracefully contracting and expanding their body, like the folding and unfolding of an umbrella. By naturalists they are ranked among the *Acalepha*; and they derived this learned Greek name from a

property which many of them possess of stinging like a nettle. Bathers often learn this by painful experience. When they fall in with a large *Scoudre* (the Scotch name), and get entangled among its long envenomed threads, they find themselves in a most unenviable predicament. I have known ladies so much stung, that, what with pain and what with fear, they were in a fever, and had to send for medical aid. Only a few of them have this stinging property; and it is probable that it is bestowed on the few for the defence of the many, as they are all supposed to say, "Touch me at your peril." Many serpents are harmless, but as others of them are exceedingly poisonous, the whole race are hated and shunned as venomous reptiles, and as kindred of the serpent that had so much share in Adam's fall. The only one of the sea-jellies that I know to be possessed of the stinging talent is the large brown *Scoudre*, so common on our shores.\*

\* The threads retain their virulence after they have been separated from the animal by the force of the waves. When I was in a boat one day near Ardrossan, I grasped, as it was carried past by the tide, what I thought was a rare and beautiful purple *Alga*, but I very speedily let go my prize. Major Martin, who was alongside of me, next grasped it as it passed him; but in a moment dashed it back into the sea. We looked at each other, and, notwithstanding the smarting of our fingers, laughed on finding that we had both greedily caught a Tartar—*dissecta membra Medusæ*.

This reminded me of what Captain James Craig had told me, on giving me a beautiful little specimen of a kind of porcupine fish, which he got off Ichaboe. Seeing many of them swimming round the vessel, he caused one to be hauled up in a bucket, and laid hold of it with his hand; when blowing itself up like a ball,

We had seen several beautiful sea-jellies this morning, chiefly those of a bluish-white colour, with violet-markings above; in some, a cross; in others, four circles. There is a pretty kind which I have occasionally seen in Arran, about the size of a large orange, of a buff colour, and more hemispherical than the commoner kinds. We saw them best from the deck of the steamer, before starting from Lamlash, and when the vessel stopped for a little in Brodick Bay. We doubt not that the tribe got the name of *Medusa* from the circular fringe of tentacula proceeding from their margin, bearing some resemblance to the *Gorgon's* head, with its ringlets of serpents.

There was one discovered by my son David, which was quite new to us, and, from its minuteness, probably known to few. We took it home, and put it in a tumbler of sea-water, that we might better observe its structure and its graceful evolutions. I would have attempted to describe it, but glad was I, soon after we had seen it, to find this done to my hand by one who is acknowledged by the best judges to be *facile princeps* in the scientific world as a graphic describer of nature—Mr. Hugh Miller—best known among men of science as the author of the truly interesting work on the “Old Red Sandstone,” but

and erecting its spines, with which it was as closely covered as a hedgehog, it soon caused him to rue his temerity. He contrived, however, to hand it to the mate, who very quickly slipped it, without warning, into his neighbour's hand; and it passed thus from hand to hand, till all were convinced that it was less *uncannie* to grasp a stout Scotch thistle, or to handle an urchin, than to have anything to do with this well-armed little African sailor.

better known to our countrymen in general as the talented editor of the "*Witness*." Nothing escapes his scientific eye; and from his "*Summer Rambles*" I learned that he had about the same time discovered it when aboard the *Betsy*, off the Island of Eigg. He speaks of two—one scarcely larger than a shilling, "another still more minute" (ours, I think about the breadth of a sixpence), "and which, presenting in the water the appearance of a small hazel nut of a brown-yellowish hue, I was disposed," he says, "to set down as a species of *Beroë*. On getting one caught, however, and transferred to a bowl, I found that the brown-coloured, melon-shaped mass, though ribbed like a *Beroë*, did not represent the true outline of the animal: it formed merely the centre of a gelatinous ball, which, though scarcely visible, even in the bowl, proved a most effective instrument of motion. Such were its contractile powers, that its sides, nearly closed at every stroke behind the opaque centre, like the legs of a vigorous swimmer; and the animal—unlike its more bulky congeners, that, despite of their slow persevering flappings, seemed greatly at the mercy of the tide, and progressed all one way—shot, as it willed, backward, forward, or athwart." The transparent tumbler gave me this advantage in observing it, that I could use a magnifying lens when it approached the side of the tumbler. Notwithstanding this advantage, it was some time before I observed the true form of the animal, as Mr. Miller's excellent description had not then been published. The transparent ball that rose

above its body was so very pellucid, that it was a good while before I observed it all. It rose to a considerable height above the buff-coloured body of the animal; and it was elegantly shaped, like the fine crystalline shades often placed over stuffed birds, or artificial flowers, or miniature figures formed of pure alabaster. The finest crystal vase was clumsiness itself when compared with it. It was fine as the transparent soap-bubble blown out of a pipe; and we doubt not that, like this bubble, it would have been iridescent, had it been so placed as that the sun could have shone on it. Delicate as its fabric was, the vigour of the little creature was very remarkable, and has been well compared to the efforts of a strong swimmer, as it alternately contracted and expanded its pellucid organization. The margin of its mouth had a close fringe of brownish tentacula. By the aid of the lens, I could observe that they were drawn in when the body was contracted, but that at every stroke they were protruded like forked lightning, or like tethered serpents, darting or flashing forth, till they were longer than the whole body of the animal.

Though I am not much acquainted with the classification of the *Medusæ*, I think that this tiny *Gorgonette* should probably be ranked in the genus *Thaumantias*, as it bears some resemblance to *Thaumantias Thompsoni*, which I found some years ago at Milport, and which is figured, I think, in the "Annals of Natural History." When I conjectured that in favourable circumstances it would be iridescent, I did not remember that *Thaumantias* was one of the



names of *Iris*, the rainbow; but this renders it probable that the name was given because of iridescence.

In looking at this little *Medusa*, with its semi-invisible gelatinous canopy, and comparing it with others of its kindred, we could not help thinking of the beautiful soap-bubble balloons we had lately seen, which, though in some respects alike, in others differed from each other. Those formed in the usual way, by air breathed from the lungs, which had lost part of its oxygen, and had got in its place some carbonic acid, were evidently heavier than the atmospheric air into which they were launched from the bowl of the tobacco-pipe; for so soon as they had lost the impulse given them when they were disengaged, they showed a downward tendency, and, after a few windings, came down to the ground. Another was formed in the same manner, with this difference, that it was filled with hydrogen gas, which had been collected in a bladder; and thus, being lighter than the atmospheric air, it rose beautifully, and soon fastened itself on the ceiling of the room in which the experiment was performed.

Will my juvenile friends forgive me, should I say that by balloons and *Medusæ* I am reminded of "young men and maidens," and should I try to read them a short lesson? Has not "God made of one blood all the nations of men to dwell on all the face of the earth?" Has he not fashioned their hearts alike?" And yet, with a common origin, and a common nature, and great similarity in many respects, is there not in other respects a striking dissimilarity?

Take a given number of the young of the same age, of the same rank, and with the same privileges—how often does their history prove as different as day and night! Some are fair, but frail, floating or fluttering about for a little in great beauty, and with some promise; but they are unsound at the core; they seek not to get quit of the stony heart which they carry about with them; they have consequently a tendency to descend, and like our carbonated bubble, they fall lower and lower, till they mingle with the dust. Others are like the massive *Medusæ*, without energy, or effort, or aim. They swim with the tide; they allow themselves to be driven about and tossed by every wind and wave; they think not of the breakers ahead, though they are constantly nearing them; and a life of aimless ease soon terminates in utter ruin. Others are like the great stinging *Scoudre*—intent on evil, and capable of inflicting it. See you a person of this description, my young friends? Flee from him; “*habet fœnum in cornu*—he has a wisp on his horn,” showing him to be vicious, given to push and gore. Shun him as you would the pestilence.

Another class there is, puffed up with self-conceit, aiming at great things, but, from want of ballast, unable to execute them. How aspiring is that little hydrogen bubble! It mounts high; but it carries little up, and it brings less down. Chemists tell us that hydrogen is the lightest of all ponderable substances. Vanity is lighter. Unhappy they who have their head full of it. They remind us of the aspiring youth in Heathen mythology, whose ambi-

tion it was to drive for a day the chariot of the sun, but, having neither strength nor skill to guide the wing-footed steeds, and leaving the beaten track, he perished in the daring enterprise. They recall also to our remembrance another ancient fable, written when foxes spake, and players on the stage not only personated fictitious characters, but wore a false face—a mask, sometimes with finer features than those it covered. In those days of yore, Reynard found a fine mask. He looked at it with surprise and admiration; but happening to turn it over, and finding that it was light, light, he lifted up his voice and exclaimed, not in Latin, “*Fronti nulla fides*—There’s no trusting to looks,”—but in pure ancient Greek, which, as his interpreter, we must render into English, “What a beautiful head!—but it has no brains!” Had this *gash* fox understood Scotch, we doubt not he would have said, “It’s very bonny, but, alas! it is *toom*!”

But we must close with the little *Medusa* with which we started; which, unless it has been known and named before, we may not improperly name, in honour of its Scotch discoverer, *Thaumantias Milleri*. It was less than any around it; but, endowed with spirit and innate vigour, it evidently rejoiced in the exercise of its power, and seemed not only the most active, but the most happy of the whole. It was delightful to see this little crystal bell putting forth a miniature giant’s strength, and, instead of yielding to the adverse tide, bounding at will through the opposing waves in companulated beauty.

And is not *it* the representative of a class? Yes, of a noble class—the excellent ones of the earth, whom God has ennobled, giving not mere talent, but energy, generated and sustained by grace. We honour talent; but mere talent may dishonour the possessor of it. Even genius may perish amidst its own deceitful coruscations; but grace burns, not with a flickering blaze, but with a steady flame—the fire of holy zeal for God’s glory, accompanied with the kindly warmth of brotherly love. It gives elevation to the mind, and heavenly strength to human efforts. He who is rich in grace is “always abounding in the work of the Lord, forasmuch as he knows that his labour shall not be in vain in the Lord.” It has been quaintly said respecting one of this class, “The sun stood still when he was not busily employed in his Master’s service.” In trying circumstances it exalts what might have seemed an ordinary character into one that is extraordinary, in doing or in suffering, converting the natural timidity of female loveliness into the warrior’s courage or the martyr’s endurance; or giving to the man whose life has been spent amidst the useful arts of peace, that heroic firmness of Christian principle which mighty kings may not be able to imitate, and which raises above the fear of man, that worketh a snare. Bernard Palissy, to whom France was indebted in the sixteenth century for the introduction of the manufacture of enamelled pottery, was one of the most extraordinary men of his time; in his moral character displaying a high-mindedness and commanding energy

altogether in harmony with the reach and originality of conception by which his understanding was distinguished. "Although a Protestant, he had escaped, through royal favour, from the massacre of Bartholomew; but having been soon after shut up in the Bastile, he was visited in his prison by the king, who told him, that if he did not comply with the established (Popish) religion, he should be forced, however unwillingly, to leave him in the hands of his enemies." "*Forced!* sire," replied the brave old Huguenot—"forced! this is not to speak like a king; but they who force *you* cannot force *me*. I can die." And he did die—not by the sword, nor by the axe of the headsman, which, comparatively, would have been merciful, but by lingering imprisonment in the dungeons of the Bastile, from which he was not delivered, till, in the ninetieth year of his age, death set him free!

## CHAPTER XVII.

A beautiful Ciliograde or *Beroë*.—*Beroë cucumis* described—Different Ciliogrades described—A rare Alga—*Gloiosiphonia capillaris*—Moral reflections—Lessons from weeds.

UNDER the last part of the general title Ciliogrades and Sea-weeds I might have a wide range, seeing that it might be understood to comprehend one of the most interesting departments of botany; but instead of availing myself of this privilege, I mean, on the present occasion, to keep within very narrow bounds, and to speak only of one rare *Alga*. And before attempting to describe it, as our gleanings in Arran are very near a close, I shall take the liberty of mentioning another *Ciliograde* or *Beroë* which was discovered in Arran. In the month of July, when my daughter Margaret was on a visit to her friend Miss R——y, at that time residing in Arran, they fell in with a *Beroë*, some specimens of which were as large as a common-sized lemon. I was sorry that I was not of the party, but I had not long cause of regret, for the succeeding week, when my young people were bathing at Saltcoats, they fell in with a squadron of them, and having captured some,

they brought them home for my inspection: "Lo, children are a heritage of the Lord. . . . Happy is the man that hath his quiver full of them." It would be paying them a poor compliment, were I to rest their filial attentions on nothing better than their capturing of *Beroës*; and yet, as I have little time myself for strolling on the shore, I count it some advantage to have occasionally younger eyes and hands at work for me. When they were younger than they are now, a penny was promised for every new shell or sea-weed, &c., they found on the shore; and when new ones became rare, the premium rose to sixpence. This I thought one of the cases in which bribery was not corruption. For some weeks after this, the *Beroës* in fine weather were found in considerable abundance. I brought some of them home, and putting them in sea-water in a jar, I had the pleasure of observing their movements. The largest one we observed here was three inches in length, by about one inch and a-half in diameter. It was very beautiful—much more magnificent than the *Beroë ovata*. In shape, it resembled an antique pitcher contracted at the neck, with a graceful revolution, or turning back at the brim. It did not permanently retain this shape, however, for it could vary it at will. The shape which it more generally assumed was that of a clasp purse, rounded at the base, and somewhat truncated at the mouth. They were of various sizes, from the size of a lemon, a little truncated above, to the diminutive size of a lady's thimble. Being in general much larger and heavier than the *Beroë ovata*, they are

more likely to attract attention; and yet I never heard of their being observed on our coast before. As I knew that some fine *Beroës* had been found on the Irish coast, I sent a figure of this one to Mr. William Thompson, Belfast, who showed it to Mr. Patterson, Belfast, who has written very scientifically on *Beroës*, and who kindly sent me his interesting publications; but as it was new to both these gentlemen, Mr. Thompson forwarded the figure to Professor Edward Forbes, London, who informed us that it was *Beroë cucumis*, and that he had found numerous specimens of it that season in Lochfine, and had spent two whole days in the examination of them. As it is a rare animal, I may give a short description of it. It is gelatinous, like the sea-jellies, and hollow inside like a pitcher. The whole body has a tinge of pink, and the eight ribs closely set with cilia, are beautifully adorned, having on each side an edging like fine crimson lace. In the larger specimens, this lace-work was studded with little orange oval-shaped bodies, like little grapes, attached by a capillary peduncle. When the *Beroë* was at rest, they rested; but when the cilia began rapidly to play, and the current of water, mixed at times with air-bubbles, to rush through the tubes of the ribs, then all the little orange bodies were in quick motion, as if dancing to the music of the spheres; or, believing in fairies, as our forefathers did, one might have fancied that they were lace-bobbins, moved by nimble, invisible fairy hands, weaving the beautiful lace edging with which they were intermingled. Professor Forbes, however,



says, as I had conjectured, that they are the eggs attached to the placentary membranes; and I doubt not that they are thus shaken by the motion of the cilia, that when fully ripe they may thereby be detached.

But why should I attempt to describe this animal, when, having been found by Dr. Maccartney, on the shore of Kent, so good a description is given in my *Vade-mecum*—Professor Fleming's "British Animals?" I shall subjoin part of it: "This most elegant creature is of a colour changing between purple violet, and pale blue; the body is truncated before, and pointed behind; but the form is difficult to assign, as it is varied by partial contractions at the animal's pleasure. I have represented the two extremes of form that I have seen this creature assume. The first is somewhat that of a cucumber, which, as being the one it takes when at rest, should perhaps be considered as its proper shape. The other resembles a pear, and is the figure it has in the most contracted state. The body is hollow, or forms internally an infundibular cavity, which has a wide opening before, and appears also to have a small aperture posteriorly. The posterior two-thirds of the body are ornamented with eight longitudinal ciliated ribs, the processes of which are kept in such a rapid rotatory motion, while the animal is swimming, that they appear like the continual passage of a fluid along the ribs," &c.

As it is not likely that I shall return to the *Beroës* again, I have been tempted to subjoin some information respecting two of that tribe, so well described by

Mr. Patterson, in the papers he so kindly sent me. They are distinguished from the *Beroës* that have come under my observation, by having tentacula. The first bears a considerable resemblance to one described by Professor Fleming in his "British Animals," under the name of *Pleurobrachia pileus*. Mr. Patterson points out in what respect his differs from *Pleuro. pileus*. His, to which he has given the name *Cydidippe pomiformis*, was found by him in considerable abundance at various times, near Larne, in the county of Antrim. It had not before been recorded as British. From Mr. Patterson's description, which is ably and tastefully written, it is evident that it is a creature of great beauty and elegance. Its form, as its specific name implies (*pomiformis*, apple-shaped), is more globular than either *Beroë ovata* or *Beroë cucumis*. Its consistence and also its movements by cilia (hence *Ciliograde*), were pretty much the same; but what most obviously distinguished it from the genus *Beroë*, was that it had two tentacula—one from each side—which, when extended, were five or six times the length of its body. These tentacula were of great beauty, being beset with delicate hair-like cilia, diverging like branchlets from the main stem; at times, indeed, rolled up like beads, but at other times moving gracefully, like the tentacula from which they sprang. The tentacula themselves were not always visible, as on any alarm, they withdrew with a sudden jerk into their sheath-like tubes, in which they lay concealed till the alarm was over, when, as they wheeled onwards, rising and fall-

ing at pleasure, they exhibited in great perfection their locomotive powers, and displayed in the sunshine the splendid iridescence of their colouring.

Another thing remarkable in them was their seeming insensibility of pain. An active little *Medusa* having laid hold on one of them, before they could be separated, it cut out from the side of the *Cydippe* a segment of a circle extending to more than a third of its breadth and fully two-thirds of its length. Did the *Cydippe* die, when three ribs with their gelatinous clothing, were thus like a crescent cut out of its body? No such thing. During four days that it was afterwards kept, it continued to career through the jar, and seemed as active and happy as before it met with the seemingly ruinous mutilation! When any of them happened to be shattered by the storm, the principle of vitality continued in the fragments. And when one of the fragments was clipped into small pieces, the cilia on the smallest *bittock* persisted in their rapid movements for a night and a day after an operation which might have seemed as deadly as if performed by the scissors of the Fates.

Mr. Patterson describes another *Ciliograde* which he had the pleasure of discovering, and to which he has given the name of *Bolina Hibernica*. It comes near the shape of *Beroë orata*; but it had four tentacula, which were very beautiful—sometimes erect like the ears of a horse, and at other times hanging down like the ears of a lap-dog. The only thing I shall advert to respecting the *Bolinæ* is their phosphorescence. When about thirty were put into a

glass jar, and the water agitated, the whole contents of the vessel became so completely lighted up as to render all the adjoining objects for a moment visible. On stirring them round, they were seen like lamps suspended in the water. "It was impossible to behold these bodies of innocuous flame floating amidst the brightness which they themselves diffused, without feeling that to convey an adequate idea of their beauty would be a task more fitted for the imagery of the poet than the language of the naturalist."

The rare sea-weed to which I alluded at the commencement of this article, was *Gloiosiphonia capillaris*, which was on this occasion found by my son David, in a rock-pool not far from Corrie, being the only known habitat of the plant in Scotland, except one. It is rare in Ireland, and still more rare in England. A year or two ago it had been found by me in Saltcoats Bay. I had observed it at low-water, in a little channel betwixt two rocks, as I was retreating with all convenient speed, lest I should be circumvented by the returning tide, as I had been some days before. In my haste, I snatched only a small portion from a large plant of it growing on a bed of shale, thinking that it was some common thing, with rather an uncommon aspect. On floating it in fresh-water, spreading it on paper, and exposing it to the air, it changed in a short time from a dull brownish-red to a fine bright crimson. I then found that it was not an old friend with a new face, but an *alga* of great beauty, which was new to Scotland, viz., *Mesogloia*, now *Gloiosiphonia capillaris*. Next sea-

son it was found in considerable abundance in the same locality, in shallow water; but from being too much exposed to the light, or to some other cause, it had lost much of its fine crimson colour. My son, by wading into deep water and catching the plants with his toes, got fine specimens, which on being plunged in fresh-water, and then exposed to the air, assumed the rich crimson hue.

If some can find sermons in stones, and good in everything, may not we extract lessons even from *weeds*? The prescribed address of a certain order of monks in meeting each other is: "*Il faut mourir, mon frere*;" and the regular response is: "*Oui, mon frere, il faut mourir!*" The "*il faut*" (the *must*) shows that Death naturally is anything but welcome. But since he *will* come, however unwelcome, and since he *may* come at an inconvenient season, when we are ill prepared for receiving him, should we not consider whether it may not be so ordered that death, instead of being met with reluctance, may be hailed as the harbinger of a blessed change? This very *alga* which has been under our consideration, when living in its submarine habitation, is but an ungainly weed; and when torn from its native rock, and exposed to the air, after being plunged in fresh-water, death ensues. Yet it is only then that its worth appears. Then only it becomes permanently beautiful, when it is clothed in the unchangeable loveliness of death. If death is to make a change for the better on thee, gentle reader, instead of saying mournfully, "We *must* die," are you not ready to say, "I would

not live alway"—“willing rather,” yea, “having a desire, to depart and to be with Christ, which is far better?” It was a mystery hid from ages, how the merciless king of terrors might be converted into a friend—how, by dying, the happiest and loveliest of human beings may become for ever unspeakably more happy and lovely. The mystery is over—the secret is divulged. The Volume of Inspiration reveals it. If thou believest in Jesus, the change which death effects is unspeakably for the better. The earthly house of this tabernacle dissolves; but thou shalt have a building of God, a house not made with hands, eternal in the heavens. “Thou shalt hunger no more, neither thirst any more, neither shall the sun light on thee, nor any heat; but he who is in the midst of the throne shall feed thee, and shall lead thee to living fountains of waters, and God shall wipe away all tears from thine eyes.”

## CHAPTER XVIII.

Visit to a man in a desponding state—His appearance of great dejection in the midst of a beautiful scene—Interview described—What a blessing, health of body and mind!—The Gospel sound in Arran—Return to Lamlash by the shore—Rarish shells—Rare Algæ.

ON Saturday, the 13th of June, 1845, after spending five days very pleasantly in the Island of Arran, I found it necessary to return home. As the steamer was not to start till three o'clock in the afternoon, we had still several hours at our disposal, and I thought I could not do better than spend part of the time in visiting an old man at some distance, who had sunk into a state of despondency. Feeling that, from the infirmities of old age, he was becoming unable for the work arising from a little ground for crop, and for keeping a cow, it was arranged that he should live with those into whose hands his little patch of ground had come; but when he had sold his cow, and paid his debts, he found that he had only a *single shilling* remaining. What was he to do? Instead of casting his cares on Him who has said, "Even unto hoar hairs I am he," he pondered on

his state, and brooded over his forlorn condition till faith was enfeebled and reason failed, and, driven on by the fiery darts of the adversary, he attempted to destroy himself. Everything was done to comfort and cheer him. All around were kind. The factor gave him a liberal weekly allowance, and sent a person to take charge of him; but all would not do. He became utterly hopeless, regarding himself as a reprobate whose prayers would be rejected, and for whom it was in vain to pray. His abode was more than three miles from Lamlash; but it was one of the finest walks in the island, as in looking back, when about mid-way, Lamlash was seen to the greatest advantage; and on looking forward, the bay and castle of Brodick were lying in beauty before you, with the most magnificent mountain scenery forming the background. I have been told that it resembles the mountain scenery of Skye—thought to be the grandest in Britain.

At this point our path diverged from the public road, and the scene became more sequestered and rural. It was one of nature's halcyon days. The air was calm; the Highland lambkins were racing in merry gambols around the grassy hillocks, or butting at each other in mimic fight. The grasshoppers were chirping amongst the heath; and the lark, though so far up in the sky as to seem little larger than a butterfly, was making the very hills resound with her melodious descant. In such a scene, is it possible to be unhappy? Look at that aged man whom we have now reached, and after a single glance you will say,



Alas! it is possible. On coming up to the house, I found several hardy Highlanders busily employed in mending their herring nets. An old man stood motionless beside them. His eye was fixed on vacancy, and it was evident that he took no interest in the work. I at once set him down as the person I came to visit; and I was right. I tried to engage him in conversation, but in vain. I asked him to take me into the house, which he did. Finding that he would not enter into conversation, I spoke to him in such a way as I thought, with God's blessing, was best fitted to dissipate the gloom, and to lead him, in Christ's name, to cast himself at the footstool of the throne, asking mercy to pardon, and grace to help. Before I left him I said, "Would you like that we should join together in prayer to the God and Father of our Lord Jesus Christ?" "By all means," was his ready reply, and it was the first sentence I had heard him utter. Bowing down, we raised our cry to Him who can cure all manner of diseases; pleading the merits of that blood which cleanseth from all unrighteousness; and praying for the outpouring of the Spirit, who can cause light to arise in darkness, and who can say to the tempest-tossed soul: "Peace, be still." Whether he who was walking in darkness, seeing no light, joined in prayer, I know not. When I bade him farewell, he spoke not a word; but the feeling manner in which he pressed my hand showed that he was not insensible of the kindness of my intentions.

Dear reader, have you "*sana mens in corpore*

*sano*—a sound mind in a healthy body?" O be grateful for the precious blessing! Who is there so thankful as he ought? I fear that we must all plead guilty. We are often least thankful for our greatest blessings, because they are common and uninterrupted, though these very circumstances should so greatly increase our gratitude. The sun daily rises on the evil and on the good. How many even of the good allow days and months to pass over their heads without ever, from the heart, thanking the Lord for giving the sun to rule the day! I believe they are more grateful for the lesser light that rules the night, because they at times feel the want of it. In the same manner, the most healthy are not unfrequently the most ungrateful for health; and how many, because they never feel reason staggering on her throne, never thank God for granting to them the continued use of reason!

How incomprehensible is mental derangement! Lofty genius is often seen to be near akin to madness. Often derangement is accompanied with increased acuteness of intellect; but then it has got a sinister bias—a wrong turn. He "is beside himself;" "he is not in his right mind;" "he is not himself;" are expressions that show that a melancholy change has taken place. The person is under a malignant influence that he cannot control. He, in many cases, feels and dreads its approach, and warns those whom he best loves to keep out of his way, and to remove from him the means of self-destruction. "Let not the wise man, then, glory in his wisdom," but let

him walk humbly before the Lord, the giver of every blessing, seeking to employ *reason* aright as a precious talent for which he must render an account.

A venerable and pious octogenarian at Lamlash had long known this old man of whom we have been speaking, and wished me to visit him. For upwards of thirty years he had been a member of a prayer-meeting along with him. He had no doubt of the sincerity of his religious profession: and though, under the influence of mental aberration, the enemy had been allowed to prevail, he fondly cherished the hope that the cloud would yet pass away, and that in his right mind he would yet glorify the Lord.\* He had often taken sweet counsel with him in going to the house of God, when the place where they delighted to worship was at what many would have regarded as an impracticable distance. What would our gentle citizens think of a nine hours' walk in going to church, and in returning? And if they would think this rather too much along a smooth pavement, or a well-made road, what would they say if it were over steep hills, and through a wild rugged moor, where there is no path except what is formed by sheep, or by the feet of travellers, and where, in some places, the best path in summer is along the rough channel of a mountain stream, and in winter, when the channel is filled with water, along the rougher banks of the rivulet, through knee-deep heather? It is not a trifle that will keep a pious Highlander from the

\* Since I wrote this I have had the satisfaction of hearing that his health is restored, and that he is now in his right mind.

place where the true Gospel sound is heard. Arran had fully shared in the spiritual deadness which pervaded Scotland in the end of the last and the beginning of the present century. A time of refreshing, however, came from the presence of the Lord. About 1812, under the ministry of the Rev. Mr. Macbride of Kilmore, there was a great revival. He was a truly pious and devoted servant of Jesus Christ, and God blessed his labours. Many waited on his ministry from all parts of the island. The venerable Christian at Lamlash told me that he and his afflicted friend had for years been in the habit of going to Kilmore on Sabbath—a walk of nearly four hours; and that after the death of Mr. Macbride they were in the habit of attending the Rev. Mr. M'Millan, then at Lochranza, about fifteen miles distant, and part of it the most rugged road ever I travelled. Far was he, however, from grudging the toil. He looked forward to the Sabbath with spiritual longing. Thirsting for the Word, he never thought the journey tedious; and though in winter he had often to return by lantern-light, he had been strengthened by the Gospel feast—he had much that was pleasant to muse upon by the way, and he never found himself less fit for labour on Monday because of his necessary journeyings on the Lord's-day. “Blessed is the man whose strength is in Thee—in whose heart are the ways of them. Who passing through the valley of Baca, make it a well; the rain also filleth the pools. They go from strength to strength; every one of them in Zion appeareth before God.”

My son had accompanied me, and for the sake of variety we returned by the Corriegills shore. A conchologist might pick up several good things about Corriegills, but there is little to be got in a hurried walk. *Amphidesma compressum*, however, is got at low water—a rare shell on the opposite coast. Some time after this, there was sent to me a bottle dredged not far from this place. It was full of fine black mud, containing some rare *Annelides*, and richly incrustated outside with *Balani*, and various kinds of zoophytes; adhering to which I found *Patella fulva*, a little limpet that was new to me. We got some beautiful sea-weeds, but nothing that we had not before fallen in with. Among those dredged by us on a preceding evening, there were some rarer Algæ than I at first was aware of. Among some of them that I sent to Mr. Ralfs, at Penzance, he was delighted to find, in fine fructification, *Calithamnion seirospermum*,\* which is very rare in England, and which had not before been got in Scotland. And among some I sent to Dr. Harvey, Trinity College, Dublin, he was not a little pleased to find what he thought was the long lost *Calithamnion interruptum*. If, after strict scrutiny, he is convinced that it is so, a figure of it will no doubt have the honour of a place in his splendid *Phycologia Britannica*, which is now being published in monthly parts.

\* Since this was written a beautiful figure of it has appeared in Dr. Harvey's *Phycologia Britannica*, under a new name *Seirospora Griffithsiana*.

## CHAPTER XIX.

Hot walk to Lamlash—Porpoises in the bay—Solan geese and gulls in the air betokening the arrival of herring-shoals—Fishermen on the shore preparing their nets and their vessels—The vessels much improved—At the time of the religious revival in Arran, the fishermen an example to all fishermen in the kingdom—The worship of God observed—Their vessels—Go aboard the steamer, homeward bound—The loveliness of the Bay reminded me of an excursion when the British Association met at Glasgow, and visited Arran—Sir Roderick Murchison's praise of Arran.

OUR walk altogether was about eight miles. As the steamer's hour was drawing near, the latter part of it required to be accomplished with all convenient speed. The day was lovely; the sun's beams were more powerful than I ever again felt them during the whole of the summer, so that I reached Lamlash in that semi-parboiled state which I have more than once made some approach to in Arran. Before we reached the quay we passed a considerable number of fishermen, who, having their nets spread on a framework of poles, were making preparation for the herring fishery. We had seen porpoises the evening before, tumbling playfully in the bay, after a satisfactory repast, it is probable, on some hundreds of

herrings. The herring gulls (*Larus argentatus*) were reconnoitring on the wing, or diving in the deep. The gannets, or solan geese (*Sula Bassana*), in their exploring excursions from Ailsa Craig, had become aware of the arrival of the wished-for shoals in the bay. They might be seen poised in the air intently on the watch with their wild, keen-piercing eyes, and then dashing perpendicularly downwards, like an arrow from a bow, disappearing for a little among the waves, but soon emerging with their silver-scaled prey in their formidable bills.\* The fishermen were making diligent preparation for having a share of the rich spoil. Of late years they have made great improvement on the structure of their vessels. Instead of being of the clumsiest form, both science and taste are now displayed in their formation, so that they are handsome yacht-rigged quick-sailing vessels. Though the vessels are greatly improved, we fear that in some most important respects the fishermen themselves have been retrograding. During the revival, and for some time afterwards, the blessed effects of increased spirituality were felt by sea as well as by land. True religion renews the man, and where the man goes he carries his religion along with him. The Arran

\* The poor solan geese, from their well-known love of herrings, are at times deceived to their ruin. A herring is nailed to a fir-board, and floated in the sea. Seeing the tempting bait, the gannet descends with great velocity; but instead of carrying off his prey, his stout bill pierces so deeply into the board, that he cannot disentangle himself, and thus becomes the property of the artful gannet-catcher.

fishermen, at that time, might have been an example to all fishermen in the kingdom. When the *take* of herrings is good, it is a delightful thing, in a fine summer evening, to see the vessels issuing from the various stations to which, in the morning, they had retired, and, like eagles hastening to their prey, converging towards the place where the booty is to be sought for. Ere the sun goes down a fleet of a hundred sail may at times be seen resting on the bosom of some tranquil bay. *Then*, however, it was not the eye only, but also the ear and the heart that were delighted. When the vessels had taken their station, when they had *shot* their nets for the night, and the hum and bustle of business had ceased—the silence that ensued was soon broken by the sweetest sounds. The voice of psalms was heard from every vessel in the fleet. The worship of God had begun. The waters wafted the joyful sound to the land; the hills re-echoed it to the sea; from the sea it ascended to the heavens; and while it added to the joy of happy cherubim, it entered, we doubt not, into the ears of the Lord of Sabaoth. We wish we could truly state that this pious and praiseworthy practice prevails still. We fear it does not. If it be the duty of Christian men to worship God in their families; and if, at the time of morning or evening sacrifice, in their lawful pursuits, they are separated from their households, if they cannot pray *with* them, surely they ought to pray *for* them. And if a sudden squall during the night should plunge them in the deep, the prospect of death would not be more awful be-



cause they had lately, in social worship, committed themselves to Him who neither slumbers nor sleeps, pleading the fulfilment of the promise, that wherever two or three are met together in the name of Jesus, there he will be with them, to bless them, and to do them good. And if Jesus, though unseen, be with them to preserve them, surely, when the morning watch arrives, they are not less likely to find that they have cast their net on the right side of the ship, and that it comes up laden with a great multitude of fishes.

At the hour appointed we were aboard the steamer, and soon the paddles began to revolve. We were "homeward bound," and to rightly constituted minds the sound is pleasant. Unhappy the man who is not happiest at home; and unhappy the minister whose greatest enjoyment is not found in the discharge of his pastoral duties among his own people! And yet the happiness of domestic life and the usefulness of a pastor are not lessened by the occasional inbreak of a short excursion on the unvaried routine of life. When we were fairly out of Brodick Bay, the loveliness of the evening and the scenery recalled the remembrance of another little excursion on a memorable day. When the meeting of the British Association took place in Glasgow, I had the pleasure of being a member, and of receiving a ticket as one of the party to explore part of Arran, and to partake of the magnificent repast given by the Marquis of Douglas to the members, in a pavilion erected for the pur-

pose at Brodick Castle. In coasting the island in the forenoon, Sir Roderick Murchison lectured, as we proceeded, on the geology of Arran. At the repast we had the pleasure of seeing and hearing some of the most distinguished *savans* of Europe. Whilst we were returning by the steamer in the evening, Professor Johnston lectured on chemistry, in connection with geology. When we were a few miles from Brodick, Sir Roderick Murchison said: "I am very unwilling to interrupt Professor Johnston in his most interesting lecture, but I am tempted to request that you will all look back for a moment on the scenery we are leaving behind." The evening sun was gilding the peaked mountains. Goatfell rose in the centre as monarch of the scene, flanked on the one side by the towering pinnacles around Glen Sannox, and on the other by Ben Noosh, and the Holy Isle, and conical Ailsa. The sea itself, under the beams of the setting sun, was like melted gold, while here and there a vessel might be seen with every sail set, as if courting a breeze, and yet lingering as if unwilling to quit the splendid scene. "Gentlemen," said Sir Roderick, "did you *ever* see anything so rich and lovely? M. Agassiz, have you anything more magnificent even in your Alpine Switzerland?" It would have been too much to expect that Agassiz would allow Scotland to carry off the palm from his beloved fatherland, but he came very near it. He said, "It is beautiful! most beautiful! And you have one thing that in Switzerland we have not—you have the sea!"

## CHAPTER XX.

Sailed for Arran—Meet Mr. Alder of Newcastle—Dredge along with him—Get Star-fishes, Zoophytes, and Nudibranchs—A new Nudibranch found by Mr. Alder—Walk from Lamlash by Whiting Bay, Kildonan, Little Mill, Auchinhew, &c., to Lag.

HAVING a few days free from any urgent professional engagement, I availed myself of an opportunity which might not soon again occur, and on the 1st of June 1846 embarked, with my son David, for our favourite Island of Arran. As an additional inducement, I knew that Mr. Joshua Alder of Newcastle had taken up his abode for a few weeks in Lamlash, and as I had had the pleasure of meeting with him in Ardrossan, I looked forward with delight to the benefit which I might derive from associating for a few days with a gentleman who is not only highly distinguished as a naturalist, but much respected and esteemed by his numerous friends for his strict honour and modest worth, and for the suavity of his unassuming manners, proceeding from a kind and honest heart. On landing at Lamlash we found him waiting our arrival on the quay, and it was soon arranged that we should spend some hours in

dredging. The afternoon was very favourable. Accompanied by Miss Alder, who enters with zeal into all her brother's pursuits, and Miss M——, my sister-in-law, who happened to be in the island, we launched from the quay and rowed to the Holy Isle before we shot our dredge. In crossing we had the pleasure of seeing several beautiful Beroës floating past us, but we were ill-prepared for Beroë-fishing, as we had no vessel either for catching or preserving them. At the first haul of the dredge we took up several things deserving of notice. At the root of some tangle brought up by the dredge we found *Comatula rosacea*, the feather-star, much prized by me when I found it for the first time in this bay two years ago, but which was now found by us in abundance, and which had been got in still greater abundance by Mr. and Miss Alder, at Torquay. A little fish was found by us, which Mr. Alder knew to be *Callyonimus Dracunculus* the sordid dragonet. We got also several specimens of the little sucker, *Lepidogaster bimaculatus*, prized as new and rare when found by me in this bay in 1844, but which I now saw was far from being rare. On the Laminaria we found *Lepralia hyalina*, *Lepralia verrucosa*; and *Lepralia annulata*, all—especially the last two—rare; also, *Tubulipora orbiculus*, and *Discopora hispida*. We got some ugly overgrown specimens of the common cross-fish and equally well-thriven specimens of *Uraster glacialis*, and a gigantic specimen of *Luidia fragilissima*, new to me, and but lately discovered by Dr. Johnston, and named by Professor Edward Forbes. Each ray was a foot in

length; so that, being fully two feet in diameter, if royalty went by bulk, this might have been king of the star-fishes. But, whatever was his rank, "*otium cum dignitate*" had not been his lot, for he bore proof, by loss of limbs, that a maritime life is not free from dangers and difficulties; for he was greatly mutilated. "Skin for skin, all that a man has will he give for his life." *Luidia* has the principle of self-preservation so powerfully implanted, that it willingly parts with its limbs that it may escape with its life. You may think yourself sure of your prey when you have laid hold of a stout ray, whereby to haul it into the boat; but the likelihood is, that though you retain the ray, your booty swims off, owing to this readiness to part with its limbs to save its life. Entire specimens of this species are seldom got. The one which on this occasion came into our hands had been in perils before, so that only two of its rays were entire. The others were in various stages of growth; and in mercy to the maimed veteran we threw him back into the deep, in the hope that he might be spared to become a perfect animal. We got this afternoon several large specimens of *Goniaster Templetoni*, a very beautiful scarlet-coloured star-fish, generally considered as a rarity, but which is far from being uncommon in Lamlash Bay. When we came on the scallop-bank we brought up lots of beautiful *Pectens*, which were prized by the boatmen for bait, but which were strictly scrutinized by us before we parted with them, in the hope of obtaining something on them more precious than all that was in them. Mr. Alder

was chiefly intent on finding Nudibranchs, while I was more on the outlook for Algæ and Zoophytes. With respect to the former, I was disappointed. I was almost sure that we should find on the clams, as we did about the same season last year, several specimens of the rare and beautiful *Calithamnion seirospermum*, now *Seirospora Griffithsiana*; but not a single frond could be seen. We got on them, however, some good Zoophytes, such as *Plumularia pinnata*, *Plumularia Catharina*, and *Thoa halecina*. I hoped that we might find *Plumularia myriophyllum*, which, especially if enriched with vesicles, would have been a prize, as the two specimens which at different times I got in Arran, are the only examples that have been found of it with vesicles. One of these specimens I had sent to my excellent friend Dr. Johnston, who has given a figure of the strange-looking vesicles, and honoured it with the following notice in his admirable work on "British Zoophytes:"

"Since the preceding sheet was printed, I have received from my friend, the Rev. D. Landsborough, a specimen of *Plumularia myriophyllum* with ovaries. These are very peculiar, and unlike any I have observed in any other Sertularian zoophyte. In the origiferous pinnules there arises from the base of the polype-cell, and on its outer side, a long gracefully-curved process; and as all the processes curve round in one direction, they give the pinnule a second character and habit, very different from that of the barren shoots. The processes are alternate, hollow, coarsely denticulated on the external edge; and at

their base, opposite the polype-cell, the ovaries are situated. These are didymous, or in pairs, sessile, smooth, resembling a muscle-shell in shape, and easily detached. They differ from the horny vesicles of the Sertularians in texture and in shape, and may best be described as naked ovaries. The spinous process which protects them appears to be formed by a prolongation of the spine that supports the barren polype cell.”\*

Mr. Alder considered himself more successful, for he found a new Nudibranch, which, in honour of the place of its nativity, he has called *Eolis Glottensis*, from *Glotta*, the Latin name for the Isle of Arran. Mr. Alder afterwards found *Doris flammea* and *Doris Johnstoni*, and a new *Doris*, very unlike any of the other British species—*Doris planata*. And he was much pleased with finding a new species of their new genus *Eumenis*, viz., *Eumenis flavida*, quite distinct from the species found in Torbay the year before, but confirming the characters given to the genus. Were I to say that these Nudibranchs differ from testaceous mollusca, as snails that have shells do from slugs that are without shells, though there would be an approximation to the truth, it would be very much to the disadvantage of the Nudibranchs, as it would give us no idea of the diversity and beauty of their form and colouring. Justice, however, is done to them in that splendid monograph of British Nudibranchiate Mollusca, by Alder and Hancock, in the course of publication, and of which, as a mem-

\* See a copy of Dr. Johnston's figure of the ovaries, at the end of this chapter.

ber of the Ray Society, I have got the two parts that are published. Great progress has of late been made in this branch of natural history. It had been so little studied that, about twenty years ago, only six genera and about twenty species had been described; whereas, when the first part of the work to which we have referred was published, fifteen genera and above eighty species could be enumerated; and even since last year upwards of a score of species, I believe, have been added to that number; and interesting additions continue from time to time to be made.

But I had something beside dredging in view at this time. Though I have circumambulated the island, I had gone along the highway, in going from Kildonan to Kilmore, and had thus missed a very interesting part of the sea-shore, which I proposed visiting on this occasion; so that David and I landed near to Boneen. In mounting the heights to reach the highway to the south of Lamlash, it was delightful to look back on the peaceful loch, sleeping in the bosom of the surrounding mountains. As the sun was very powerful, it was delightful also to take breath; but this was a pleasure that could not long be indulged in, as it was already five o'clock, and a walk of some length lay before us. As my time was limited, I could have wished to reach Lag that evening; but as it was fourteen miles distant, and as the afternoon was one of the very hottest of the season, I proposed staying for the night at Kildonan, being told that we might get lodgings there. Our path lay



along the shore, and our walk was a delightful one. There was scarcely anything in the scenery that could be called grand, but there was so much sweetness, that, in the loveliness of the scene and of the season, we were disposed to say, "*Nunc est formosissimus annus.*" In passing near to King's-cross, we searched for the tent-making spiders, and I was sorry that not one of them could be found. I was more wishful to renew my acquaintance with the tent-makers, as my enthusiastic friend Mr. Adam White of the British Museum, has dubbed this kind *Epeira Landsburgii*. At a more advanced period of the summer, I doubt not that they will resume their textorial occupation.

After making some calls at Whiting Bay, we trudged along by Largie-More, Largie-Menoch, and Largie-Beg, which I have become so learned in Gaelic as to know mean the great, the middle, the little field. In passing the steep rocks at Dippen, we found that they were full of life, being inhabited by flocks of jackdaws and starlings, which, having their nests there, kept up a continual concert, after a sort; for though their song has little music in it, it has this recommendation, that it is expressive of happiness. We doubt not that they are very happy. They may have large families at this season to provide for, but they grudge no labour, and they have no care. "They sow not, neither do they reap and gather into barns; but our heavenly Father feedeth them." If God so feed the fowls of the air, how much more will he feed his intelligent offspring, if, even with a little faith, they put their trust in him!

After a very pleasant walk we reached Kildonan about eight o'clock. We thought that our walk was over for the evening; but we had been reckoning without our hostess, for on reaching the house which we wished to be our domicile for the night, we learned that the widow had ceased to entertain travellers. Laden with years and infirmities, she was sitting in an arm-chair, evidently very feeble, and at times groaning with pain. She said that she was very sorry that she could not accommodate us; that she was quite frail; that her family were either gone down to the grave, or removed from her; that one of her daughters, who had been married in Greenock, had come on a visit to her mother and her native place, but that the cart which had conveyed her and her husband and children from Lamblash by night, had been overturned; that her husband's leg had been broken, and that he was at that time occupying the apartment and bed to which, otherwise, we should have been very welcome. There was not another place where we could be accommodated nearer than Lag, which was six miles farther on. We had not yet dined, as at dinner time we had been delightfully occupied in Lamblash Bay. We asked if she could give us any refreshment. She readily agreed to get tea for us, and with her daughter's aid, it was soon prepared—tea, and oaten cakes, and delicious butter, and fine fresh eggs, forming the best possible repast for pedestrian travellers. In asking a blessing from the Lord, I had prayed for the afflicted widow, and had besought the Lord to exercise his healing power

and sanctifying grace in behalf of her son-in-law, still confined to bed in the adjoining apartment. Concluding from this, I suppose, that I was a minister, when I asked her what we were to pay, she said with great fervour, "Nothing, nothing; you are very welcome to anything I could give—I only wish it had been better." As she persisted in her refusal, I put something into the hands of her little grandson, and it was with difficulty that I could get off without taking back the half of what I had thus given, though it was not more than we would have been charged in the Lowlands. On making inquiry about her afterwards, I learned that she was a truly worthy old woman: that her refusal did not proceed from the greedy *anything-you-please* principle, from a pretence of kindness, in order in the end to obtain not only what could be claimed, but a gratuity as a requittal for the appearance of liberality; but that in the depth of her poverty she was actuated by that genuine kindness of heart by which through life she had been characterized.

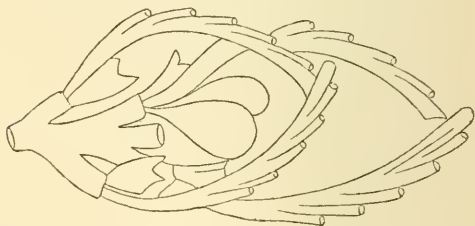
We had already walked eight miles, and six more lay before us. In the days of my youth, this would have been a pleasure; but the buoyant elasticity of youth is gone, and, though the grasshopper is not yet a burden, the autumnal almond tree, premonitory of winter, begins to flourish. Yet I have cause to be exceedingly thankful for much health and strength, and for a considerable residue of those walking capabilities which often rendered me very independent, and enabled me to enjoy pleasant excursions, which

otherwise I must have denied myself. To my young companion, though laden with a portmanteau, the walk was not at all formidable. It was now betwixt eight and nine o'clock, however, and no time was to be lost in idle parley. We pushed on, therefore, though the sweet scenery tempted us at times to halt. Plada lay before us in sober beauty; the sea beyond lying under a veil of haze, and the sea around the little island being beautifully dotted with fishing boats. Before we reached Little Mill we had a striking view of Bennan-head, a bold headland, which loomed very large amidst the closing shades of evening. At Auchinhew there is a deep glen, through which a bold *burn* pours its waters in limpid purity, except where, in dashing over a rocky barrier, they are converted into snow-white foam. Our ascending path lay along this glen, and gladly would I have explored it, had not the evening shadows ceased to lengthen; the sun having gone to beautify another hemisphere with light and shade. The fall, or cascade, of Eiss-a-More, Headrick tells us, "much exceeds a hundred feet perpendicular;" and he adds, "with a vivid sun at my back, and the cascade in front, I enjoyed a beautiful iris, which was a perfect circle; and, by varying my position, it varied from a circle and fashioned its drapery, in the lower parts, so as to invest the stones in the chasm below the cascade. This phenomenon was produced by the refraction of the rays of light by the particles of water or spray projected from the cascade." We may still further tempt those who have leisure to visit

it, by quoting Mr Ramsay's excellent description. "To the north-east of the farm of Auchinhew is a most picturesque waterfall, called Eiss-a-More, or the Great Fall, which precipitates itself over a lofty precipice into a magnificent amphitheatre, surrounded by perpendicular cliffs, the lower part of which is composed of layers of sandstone, interpenetrated by dykes, which end in overlying masses of greenstone and basalt, partly jointed, and arranging themselves into rude and irregular prisms. Where the sandstone joins the igneous rock it is much indurated. The parallelism of the layers is slightly discomposed at the penetrating dykes, forming small faults."

In approaching Auchinhew we had inquired at a person we met our distance from Lag, and were told that it was only four miles, and that we would easily reach it by ten o'clock. After walking half-an-hour at a pretty quick pace we put the same question to another person we met, and the answer was that Lag was four miles and a half distant. This was not very cheering, but we went on courageously, for the evening was charming, though extremely hot; and we were serenaded by the mavis, the blackbird, the cuckoo, and also by the cornerake or rail, now heard by us for the first time this season; and though not of itself sweet, its note is thoroughly rural, telling us that wished-for summer is at last come, and has clothed the corn-fields with enough of verdant blade to conceal the lurking stranger so often heard and so seldom seen. Having proceeded about a mile, we again made inquiry as to the distance of Lag. Alas!

Lag, instead of lagging, seemed to be floating on before us, for it was still distant four and a half miles ! Whether it took pity on us and retraced its steps we shall not pretend to determine, but the last miles certainly seemed short ones, and we had the pleasure of reaching it a little after ten o'clock ; and it was worth reaching, for it is a very comfortable, well-kept inn, in a lovely dell. Though I had been near it before, I had never seen it, for it lies snugly hid in a sweet hollow, with a lively stream, called Torlin Water, running through the little dale close to the inn. The sleep of the labouring man is sweet, and so is the sleep of the weary traveller ; and committing ourselves to Him who slumbers not, neither sleeps, we were soon in the enjoyment of refreshing repose.



PLUMULARIA MYRIOPHYLLUM with ovaries.—See page 292.

## CHAPTER XXI.

Sleep, a precious blessing—Ancient necropolis at Torlin—South-end Harbour—Rare Nudibranchs, Zoophytes, and Algæ—Cliffs on Kilbride Farm—Bird-nesting—Wild-flowers—Struye rocks—Monster's Cave—Anecdote of hawk and swallows—Rare rock-plants—Bennan-head—Reflection from the sea—"Sky and Ocean"—View of Plada and Ailsa—Kildonan, Dippen—Fresh-water Algæ—Dr. P. Neill and *Primula Scotica*—Hard names—Reach Whiting Bay—Evening worship on the green—Surrounding scene.

SLEEP has been spoken of as the twin-brother of death. How welcome the one—how dreaded the other! Sleep has been spoken of by the poet as a fair-weather friend:—

"He, like the world, his ready visit pays  
Where Fortune smiles; the wretched he forsakes;  
Swift on his downy pinions flies from woe,  
And lights on lids unsullied with a tear."

We own no obligations to Fortune; we are little careful to court her smile, and we dread not her frown; but we owe much to a kind Providence, and we lament that we are not half so grateful as we ought for innumerable favours, and, among others, for so many nights of refreshing rest. This night

had added to the number. Many had lain down to arise no more. Many had been filled with tossings to and fro to the dawning of the day. We had lain down, and had awaked in health and strength; for the Lord had given us refreshing rest in sleep. After an early breakfast we sallied forth. I was glad that we had reached Lag the evening before, for otherwise I could not, without over-exertion, have accomplished what I had planned. We had still enough before us for the day, to explore the sea-shore from Lag to Kildonan, and afterwards to walk to Whiting Bay. The first point at which we aimed was Claitshire and Southend Harbour. Claitshire is a group of six dykes in the sea, two of which are of great size. Clachig stood temptingly up on the hill-side above Claitshire; and fain would I have claimed some old acquaintance with the kind family there, but time would not permit. On leaving Lag we had inquired the way to Southend Harbour at a person engaged in agricultural work on the farm, and he kindly accompanied us part of the way, and gave us much interesting information. Having inquired at him respecting something like an old building on a height to the left, he told us that it was Torlin, one of the greatest curiosities in Arran; that it had been a very ancient burying-place, of which there was not a trace of information in history; that some years ago excavations had been made in it; that it was found to be divided into several cells or catacombs by separating walls; that each apartment was filled with human bones to the depth of about eight feet; and that, from



the great accumulation of bones it was evident that many thousands of the human race had found there their long home. We regretted that we could not visit this antique necropolis.

The natural harbour at Southend is a great curiosity, to which our attention had been drawn by the description of it in our friend Mr. Ramsay's book. This geological *lusus naturæ* is thus formed: Two dykes, parallel to each other, run a long way into the sea, forming the east and west sides of the harbour. A transverse dyke of smaller dimensions, runs from the one dyke as a jetty, leaving a passage into the basin or inner harbour, in which vessels may lie at anchor, sheltered from the winds and waves. And then, to complete the harbour, another dyke on the land side runs parallel with the jetty, forming a quay to this natural harbour. But the dykes that abounded on the shore were interesting, not only in a geological point of view, but as forming good ground for us in the quest of Algæ and Nudibranchs. In the pursuit of the latter, my son, as having younger eyes, was much more successful than I was. He got *Ægires punctilucens*, so rare, that till Mr. Alder got it about a fortnight before at Ardrossan, only one example had ever been found. This is one of the creatures that show that many of the works of God must be "sought out," and carefully examined, before their great beauty can be discovered. A person who knew nothing about Nudibranchs would pass by this as undeserving of notice. It might be thought a little dark-grey marine slug. Its body, however, is pretty thickly

set with little truncated turrets; and the spaces betwixt these are occupied by little rings formed of black dots; and in the centre of each circle there is a little point or spot of the most brilliant blue, like the dots on *Actæon viridis*, or the lines on *Patella cærulea* or *P. pellucida*. It is from these shining spots that it takes the specific name *punctilucens*. He got also *Polycera ocellata*, *Eolis coronata*, *E. Drummondi*, and a large light-grey specimen of *Eolis papillosa*. He also succeeded in finding a rare Zoophyte, *Lucernaria quadricornis*, new to Britain when Mr. Alder found it at Ardrossan a fortnight before; but which Dr. Johnston thinks may be a variety of *Lucernaria fascicularis*. He got, besides, something that was new not only to us, but also to Mr. Alder, but which was like a *Lucernaria* in a young state. We got also some good Algæ, such as *Polysiphonia parasitica*, *Calithamnion arbuscula*, &c. Were I writing an agricultural survey, I might find much to say in commendation of the excellent farming on Clachig, Lag, Kilbride, &c.; for Arran has here lost its alpine character, and stretches forth into extensive and well-managed farms, consisting of fertile plains and sunny braes, laden with rich crops. But it is not of crops and cows that I am inclined to speak—but of birds, and beasts, and creeping things—of crags and cliffs, and caves and cleughs, and of the various shrubs, ferns, mosses and wild flowers, that adorn the same. I was much pleased with the fine precipitous rocky cliffs facing the sea on the farm of Kilbride, composed chiefly of sandstone. These cliffs are the

favourite resort of several of the feathered tribes, chiefly jackdaws and rock-pigeons, that having at this time their nests there, kept up an incessant cooing and cawing. Some boys passed us, from whom I learned that they were on their way to the cliffs, bent on scaling them, that they might carry home with them some young jackdaws as pets. I charged them to show their tender-heartedness by leaving some of the brood in the nest, that the parent birds might not be left to wail in utter bereavement.

“I have found out a gift for my fair—  
I have found where the wood pigeons breed ;  
But let me the plunder forbear,  
She will say 'twas a barbarous deed.  
For he ne'er could be true, she averred,  
Who could rob a poor bird of its young.  
And I loved her the more when I heard  
Such tenderness fall from her tongue.”

I would not trust my life in the hands of the heartless clown, who, when a boy, could wantonly plunder a nest, that he might have the pleasure of putting the unfledged young to death. I have known such boys, and they always turned out worthless fellows.

Among the diversity of wild flowers on the shore at this place, two particularly attracted our attention—the one was *Lithospermum maritimum*, a beautiful plant, with procumbent branches spreading on the sand. The flowers are of a beautiful purplish-blue, and the leaves are covered with a fine glaucous bloom, like that seen on some plums. It is sometimes called the oyster-plant; for the flavour of the plant, when chewed, resembles that of oysters. The other

flower, which we still more admired, was a variety of the little Scotch rose, *Rosa Spinosissima*. This is certainly not a rose without a thorn, but it is nevertheless one of great loveliness. I have often admired the numerous varieties of this little rose in a cultivated state, but I never saw in a garden any collection equal in beauty to what we here saw in its wild state. The usual hue of this little rose is creamy-white; but here, on a cream-coloured ground, the petals were beautifully shaded with pink, from dark to lighter hues. Others, instead of being delicately shaded, were beautifully mottled with pink; and as there was considerable variety in the shading and mottling, and as these sweet flowers were in full blow, we were disposed to linger among them in admiration. How beautiful is the rose in all its endless varieties! The nightingale is fabled to admire it in the East, the Teian Bard admired it in Greece, and celebrated it in his lively song; and whether from admiration of the poetry or from love of the flower, some Anacreontic lines took an early hold, and I shall venture to quote them from memory,—

Ῥόδον ᾧ φερίσπον ανθος

Ῥόδον ειαρος μελημα

Ῥοδα και θεῶισι τερπνα.

Best beloved of Flora's train,  
 Glory of the vernal plain,  
 Prized by those whose lordly sway  
 Fairest, widest realms obey—  
 Rose, whom even the gods above  
 Cherish with immortal love.

J. G. S.

We soon reached Struye Rocks at the very southernmost extremity of Arran; and at the very commencement of the cliffs we found a great cave, which attracted our attention. We were glad to enter it, to be shaded from the heat, and it was literally the shadow of a great rock, or of a mass of rocks. Rocks of softer material, which had been imbedded, had been washed away, probably when the sea was at a higher level. The coolness of the cave was very refreshing to us. How often have Zion's travellers, when weary, felt the blessed influence of a more delightful shade! The large excavation into which we had now entered is called the Black Cave, or the Monster's Cave. The mouth and sides of the cave are supported by rude basaltic columns, giving it somewhat the appearance of Gothic architecture. It may be at the mouth eighty or ninety feet in height; the breadth is about the half of the height. The length is considerably greater than the height; but the floor, instead of being level, inclines upwards till it terminates in an opening which communicates with the cliffs above. Owing to this orifice a current of air passed through the cave—very agreeable in so hot a day, but which, if long enjoyed, might not have been very safe; so that after having gathered in it some specimens of *Asplenium Marinum*, we gave it up again to the rock-pigeons, a covey of which had issued from it as we entered.

Leaving the cave, our path for a considerable way was a very rugged one, whether we kept low down among the large boulders close by the sea, or kept farther up close by the base of the cliffs. Owing to

the great heat reflected from the rocks, I was glad at times to stand still to contemplate the precipitous cliffs which, in rude columnar form, rose to a great height; or to listen to the mingled cry, and watch the evolutions of the numerous birds which had their nests in the crevices of the rocks, far out of the reach of man. In addition to the jackdaws, and pigeons, and starlings, blackbirds and mavises might be seen, with more than one kind of hawk, which would not have far to travel in search of booty for their young. There seemed, however, to be a good neighbourly feeling among the tenants of the rock; for the peaceful pigeons, and even birds of smaller size, seemed to approach the predaceous hawks without fear, either having learned hardihood from being accustomed to danger, or having taught the hawks, out of respect to their numbers, to be on their good behaviour at home, and to depend on captures from abroad. Since I wrote the preceding sentence, a paragraph in a periodical presented itself very opportunely, showing that even the smaller birds know that union is strength, and that they can cause their cruel oppressors to quail under their united assault, and quit the prey which their greedy claws had clutched. "On the forenoon of Monday last, while some boys were watching a pair of swallows feeding their young behind Charlotte Street, a hawk skimming along the eaves of the houses suddenly pounced upon the nest, and carried away two of the brood. One of the parent birds having witnessed the onslaught, instantly gave utterance to a peculiar cry, which, as by the

power of incantation, quickly convened a noisy and enraged swarm of comrades from all quarters, who, with one consent, gave chase to the destroyer, and overtaking him ere he had got half across the Inch, commenced such a desperate attack that he soon gave evident signs of being fairly overmastered, and ultimately sought the ground at a short distance from the fisher's lodge, where he bravely tried his best to repel the onsets of his assaulters, but was compelled to relinquish his prey and seek for safety in inglorious flight. After his departure, which was effected under no little molestation, the swallows set about the conveyance of the young ones to the nest, which, it is said, they effected in fine style, and seemingly to the satisfaction of the whole tribe, who gave unmistakeable signs of being more than usually pleased on the occasion."—*Perth Advertiser*.

One of the chief reasons why I wished to traverse the rugged road along the base of Struye Cliffs, was that I might try to fall in with some of the rare plants that have their habitat there. I remember with what pleasure Dr. Curdie, who discovered them, brought me specimens of the following: *Lathyrus sylvestris*; *Althea officinalis*; *Carlina vulgaris*; and *Inula Helenium*. They are very rare, and therefore prized by botanists. It was not my hap to find any of them; and I was not surprised at this, as I was making a hasty transit. They could not so easily elude Dr. Curdie, who lived near the place, and could leisurely scrutinize every cliff, and crevice, and cranny of this wild and rugged spot.

Bennan-head is a continuation of these rocks, and in passing under it, it did not seem so bold a headland, as when seen betwixt us and the horizon in approaching from the eastern side the evening before. The slip of level land betwixt the rocks and the sea becomes a little broader than at Struye, and it is carefully cultivated up to the very base of the cliffs. After admiring the crags, and crops, and pastures on the slope to the left, we had only to turn to the right to see them reflected in the glassy sea, in all their diversified colouring of yellow, and green, and grey. How beautifully such a scene as this is described by my highly accomplished friend, the Rev. J. G. Small, in his sweet "Songs of the Vineyard."

"Calm is the face of ocean—not a breath  
Of wind disturbs its quiet; and it lies  
Now like some lovely saint just hushed in death;—  
Now, as the varying aspect of the skies  
Is shed on the responding scene beneath,  
Like some fair being wrapt in sleep it seems,  
While we may almost trace her varied dreams  
In her mild features,—smiling now in love,  
Now sunk in pleasing sadness, calm and deep;  
And each sweet change that from on high is given  
Seems kindly ordered by a Power above.

‘Thus giveth He to his beloved sleep.’  
Thus dreams of bliss, and chastening griefs, and even  
The shades of death, fall light on the pure soul  
from heaven.”

This is exquisite! and could I write such lines as these, I would be greatly tempted exultingly to say, "*Io anche sono poeta.*" The different patches of crop along this landward slope seemed to belong to different persons—consequently, better and worse cul-



tivated. Some patches were clean, and healthy, and verdant; others had a golden aspect from the copious intermixture of corn, marigold, and wild mustard; and though the owners might not think this splendour a sufficient compensation for a light grain-crop, we were taught that naught is made in vain, for the happy hum of myriads of busy bees showed us that though it is not all gold that glitters, yet this yellow weed was more prized by them than all the gold that ever issued from the rich mines of Peru.

In passing Drumlabara, we had a very singular view of Plada and of Ailsa. Plada is a little island about a mile from the shore of Arran; and Ailsa is a magnificent conical mountain firmly anchored some dozen miles out at sea. From this point of view Plada lay full before us, and so concealed the intervening miles of sea, that Ailsa, towering above it, seemed placed in close juxtaposition. Plada would have afforded us gratification, though we had repeatedly visited it before; but the old truthful sentence, "*Tempus fugit*," was sounding in our ears; and I had to be satisfied with the remembrance of its semi-columnar rocks, and of its old and new light-houses, which distinguish it from the single light of Cumbræ, twenty-two miles farther up the Firth. And I remembered, also, the little creek at the landing-place, filled, when I last saw it, with many kinds of *Alge* and beautiful *Medusæ*. We had also before our eyes the old castle of Kildonan, which we would gladly have revisited; but "*Tempus fugit*" sounded as loudly as ever, and on we trudged towards Dippen—not the

bold cliffs of Dippen on the sea-shore, which "*Tempus fugit*" would have still more sternly interdicted, but the farm-house of Dippen on the straight road to Whiting Bay. We ventured, however, to look into a well at Dippen, in which, some years before, we had got *Batracho spermum moniliforme*; and we were glad to find that this interesting *Batracho-spermum* had kept possession of the habitat, and that now there was conjoined with it a kindred freshwater beauty—*Draparnaldia glomerata*.

At Largie Bay we had observed, in a well, the evening before, plenty of *Oscillatoria nigra*, and we wished, as we returned, to take with us specimens of a plant which, from the oscillatory motion of its filaments, seems to be endowed with animal life; but great changes often take place in a night in the condition, not only of men, but of plants. "They come up in a night, and perish in a night." In the course of a night the *Oscillatoria* had in one sense been lifted up, and in another sense degraded and debased. It had been lifted up from its lowly situation in the limpid fountain, and was floating at the top of an old herring-barrel, which, in order that it might be cleansed from pollution, had been filled with water from the *Oscillatoria*-yielding well! This reminded me of what I had been told many years ago by my worthy and well-known friend Dr. Patrick Neill.—In one of his botanical excursions to the north, he had been among the first to discover *Primula Scotica*—one of the most lovely of our rare native plants—a little pink Scottish primrose. Next year he directed his steps to the same

place, and he had been requested by many of his friends in Edinburgh to bring them specimens of the rare Scottish primrose. He found the place, but, *horresco referens!* he stood aghast when he saw that the farmer had been before him, and had covered over the whole field—Scottish primroses and all—with a thick and fragrant top-dressing of herring-guts!

Some of our fair readers who have plants and flowers, may be disposed to say, “I wish he would speak of his plants under plainer titles, instead of giving such jaw-breaking names as *Batracho spermum moniliforme!*” Dear lady, I fear I would not greatly recommend my little favourite to your regard by introducing it under the more intelligible name of *pad-dock-spawn*; for since the truth must be told, we must confess that it has taken its learned name from its resemblance to the spawn of frogs. But if you can prevail on yourself to handle what may seem a mass of dotted gelatine, do take a little of it, and casting it into a basin of water, and placing some white paper under it, bring it out of the water on the paper, if you can, for it is as slippery as an eel; and if you succeed, you will be surprised that you did not before observe its surpassing beauty. It has spread itself out into numerous branches; each branch is like a string of beads fastened together by almost invisible gelatine; and beautiful as it is to the naked eye, it becomes exceedingly more so under a magnifying glass; for every bead is of such exquisite workmanship, that you will confess that nothing could form it but the finger of God!

After a pretty long walk, we reached Mr. King's at Whiting Bay, in good time for tea, and with Highland appetites to enjoy it. I found that it had been arranged that I should preach on the green at Silver Bank soon after tea. As there had been short warning, the congregation was not great, but it was composed of persons from various quarters—some from Ayrshire, others from Renfrewshire, and our gentle and amiable hostess and her sister were from London: and then there were the Highlanders, some of whom were very patriarchal in their appearance—persons of known worth and piety, who were seen reclining on the green sward before the appointed hour, hungering for the Word, even from a Lowland tongue. We were under that canopy which the Lord stretched forth of old. On the one side was the sea, which from the beginning of time had not ceased to ebb and flow; and though in winter, with its dashing surge, it almost shakes the stable earth, now, under the influence of a gentle summer breeze, it seemed playfully coquetting amongst the trap dykes, or holding a kind of *sotto voce* converse with the smooth pebbles on the shore. On the left were the everlasting hills, skirted towards their base with natural copsewood, in which the birds seemed to vie with us in our song of praise. In front were King's-cross-point and the Holy Isle; the one reminding us of a brave king, the deliverer of his country—the other reminding us of a faithful servant of Jesus, honoured in breaking asunder the enslaving chains of Satan, and shedding the beams of Gospel light over the benighted isle.

There was much to impress us with a sense of the power and wisdom, the goodness and mercy of God; and also with a deep sense of the great responsibility and of the fleeting nature of the life of man. "Our fathers, where are they? the prophets, do they live for ever?" King and saint have passed away, and those whom the one led to battle, and also those whom the other sought to lead into the way of life. The place that knows us, shall soon know us no more for ever. O may we follow Jesus, that we may be followers of those who through faith and patience are now inheriting the promises!

## CHAPTER XXII.

Walk on the shore at Whiting Bay—Algæ, &c., found—A day's dredging in Lamash with Mr. Alder and Major Martin—Shells, &c., dredged—Description of the nests of *Lima tenera*—Its beautiful appearance—Its mode of swimming—*Amphidotus purpureus*—*Bolina Hibernica*—Great heat of the weather—At Whitehouse—Botanical walk with Rev. Mr. Stevenson—An anecdote—Adders—Leave Arran—List of shells, &c.

Two lovely days had passed over our heads, and the 3d of June seemed resolved to be fully as delightful as its predecessors. After morning worship and breakfast we set out for Lamash, intending, however, to spend some time on the strand at Whiting Bay. We were joined by my sister-in-law and my daughter Isabella, who had been for some days with our friends at Silver Bank, during which time they had collected some good Algæ on the shore—*Griffithsia setacea*; *Enteromorpha clathrata*; *Helminthocladia virescens*; *Nitophyllum laceratum*; *Rhodomenia laciniata*; *Calithamnion corymbosum*; and magnificent specimens of *Polysiphonia parasitica*. These were found in pools, growing on the purple scurf on the rock forming the basis of *Millepora polymorpha*. We found also a beautiful little Medusa. The external covering was

very conical, and clear as crystal, and the body of the little beauty was full of granules of the richest vermillion colour. It was somewhat injured when found, but a figure of it taken by Margaret was shown to Mr. Alder, who thought that it was *Thaumantias piléata* of Forbes. Isabella handed me an Alga which she had gathered, and I would have cast it away as something common, in a state approaching to decomposition, had she not asked me to observe how tough it was. I found that it was nearly as elastic as India rubber. I sent it to Dr. Dickie, King's College, who has kindly resolved several of my algological doubts, and I learned from him that it belongs to the new genus *Micromega*, having the frustules of *Schizonema*, but with a continuous frond.

Among the trap dykes, which are so numerous at Whiting Bay, we found an *Echinus*, which congregates in the pools, but which, I suspect, has not yet been described. I mentioned it on another occasion as a variety of *Echinus lividus*, but I now suspect that it is different. It resembles in hue and form *Echinus miliaris*, but it is of far greater size. Among the same trap dykes David found a fine specimen of *Acteon viridis*, and as no plants of *Codium tomentosum* were at hand, it would appear that the woolly filaments of that plant are not its only diet. He caught also a fine little Nudibranch, which was quite new to us. On showing it to Mr. Alder, he told us that it was *Triopa clavigera*, which was so much admired by Müller, who first described it, that he begins by saying, "How wonderfully the great Creator

has adorned this beautiful little creature!" I shall not attempt to describe it, but we shall have justice done to it by-and-by, by the pencil of Mr. Alder or Mr. Hancock. Leaving the shore we sauntered on towards Lamlash.

Next day, the 4th June, was as sweet and lovely as heart could wish. Major Martin had arrived from Ardrossan, and, as he had a dredge of his own, it was arranged that he should go in a boat by himself, and that we should go in another along with Mr. and Miss Alder. The boats crossed and re-crossed each other in the bay. At first we were very unsuccessful. The boatman, that we might lose nothing that entered his dredge, had covered it all with stout canvass. This was well intended, but it did not answer the purpose, for the canvass being thick retained the water, so that as we moved rapidly along a whirlpool was formed in the dredge, which swept out every thing that was scraped up, and when hauled up we had nothing but a bagful of water. We tried a small dredge of Mr. Alder's, with which we were tolerably successful. Our best haul, to all appearance, consisted chiefly of coral (*Millepora polymorpha*) of a reddish hue, but intermixed with it there were several things of value. On an old Pecten there were several specimens of a pretty little shell, *Odostomia pallida*; as also of a shell which is a beauty when in a good state, *Cyprina minima*. We got also *Cerithium adversum* (*Terebra perversa*, Flem.), a rare shell, even in a dead state, but in this case inhabited by the living animal. *Trochus tumidus* was not rare, but



we fell in with some that were rare—*Trochus Martini* of Smith—which is found to be *T. Millegranus* of Phil. and *Pecten Landsburgii* of Smith, which turns out to be *Pecten striatus fuci* of Gmelin. The most interesting, though not the rarest thing we got, was *Lima hyans* of continental writers, *Lima tenera* of Turt. I had before this some specimens of this pretty bivalve, and I had admired the beauty and elegance of the shell, but hitherto I had been unacquainted with the life and manners of its inhabitant. Mr. and Miss Alder had got it in the same kind of coral at Rothesay, so that when Miss Alder got a cluster of the coral cohering in a mass, she said, “O, here is the *Lima’s* nest!” and breaking it up the *Lima* was found snug in the middle of it. The coral nest is curiously constructed, and remarkably well fitted to be a safe residence for this beautiful animal. The fragile shell does not nearly cover the mollusc—the most delicate part of it, a beautiful orange fringe-work, being altogether outside of the shell. Had it no extra protection, the half-exposed animal would be a tempting mouthful—quite a *bonne-bouche* to some prowling haddock or whiting; but He who tempers the wind to the shorn lamb, teaches this little creature, which he has so elegantly formed, curious arts of self-preservation. It is not contented with hiding itself among the loose coral, for the first rude wave might lay it naked and bare. It becomes a marine-mason, and builds a house or nest. It chooses to dwell in a coral grotto. But in constructing this grotto, it shows that it is not only a mason, but a

rope-spinner, and a tapestry-weaver, and a plasterer. Were it merely a mason it would be no easy matter to cause the polymorphous cord to cohere. Cordage, then, is necessary to bind together the angular fragments of the coral, and this cordage it spins; but it spins it as one of the secrets of the deep. Somehow or another, though it has no hands, it contrives to intertwine this yarn which it has formed among the numerous bits of coral so as firmly to bind a handful of it together. Externally, this habitation is rough, and therefore better fitted to elude or to ward off enemies; but though rough externally, within all is smooth and lubricous, for the fine yarn is woven into a lining of tapestry, and the interstices are filled up with fine slime, so that it is smooth as plaster-work, not unlike the patent Intonaco of my excellent, ingenious friend, Mrs. Marshall. Not being intended, however, like her valuable composition, to keep out damp or to bid defiance to fire, while the intertwining cordage keeps the coral walls together, the fine tapestry mixed with smooth and moist plaster, hides all asperities, so that there is nothing to injure the delicate appendages of the enclosed animal. Tapestry, as a covering for walls, was once the proud and costly ornament of regal apartments; but ancient though the art was, I shall answer for it that our little marine artisan took no hint from the Gobelins, nor from the workmen of Arras, nor from those of Athens, nor even from the earliest *Tapissiers* of the East. I doubt not, that from the time Noah's Ark rested on the mountain of Ararat, the forefathers of these beautiful little

*Limas* have been constructing their coral cottages, and lining them with well-wrought tapestry in the peaceful Bay of Lamlash.

When the *Lima* is taken out of its nest, and put into a jar of sea-water, it is one of the most beautiful marine animals you can look upon. The shell is beautiful; the body of the animal within the shell is beautiful; and the orange fringe-work outside of the shell is highly ornamental. Instead of being sluggish, it swims about with great vigour. Its mode of swimming is the same as that of the scallop. It opens its valves, and suddenly shutting them, expels the water, so that it is impelled onwards or upwards; and when the impulse thus given is spent, it repeats the operation, and thus moves on by a succession of jumps. When moving through the water in this way, the reddish fringe-work is like the tail of a fiery comet. The filaments of the fringe are probably useful in catching its prey. They are very easily broken off, and it is remarkable that they seem to live for many hours after they are detached from the body, twisting themselves like so many worms.

How prone are we to forget the Creator, even when we are speaking of his wondrous works!—to rob Him of his glory, and to take to ourselves the praise! How ready are we to sacrifice to our own net, and to burn incense to our own drag! “Is not this great Babylon, that *I* have built for the house of the kingdom, by the might of *my* power, and for the honour of *my* majesty?” How apt are we, in admiring the skill and operative dexterity of the inferior animals, to

admire them without adoring Him who teaches them instinctively to perform what calls forth our wondering admiration !

On comparing notes, we found that Major Martin had been still more successful, for he had more active boatmen and a better dredge. He had got three specimens of *Spatangus purpureus*, the purple sea-urchin, which is rare; and, as usual, there were some of the pretty little *Montacuta substriata* lodging among their spines. He got also *Pleurotoma Boothii*, first dredged by Mr. Smith and Professor Forbes, in this bay. He got also *Pecten obsoletus*; *Pecten fuci* (*Landsburgii* of Smith); a large nondescript *Nucula*; *Comatula rosacea*; and a nearly entire specimen of *Luidia fragilissima*.

I had almost forgot to mention that we saw some pretty little *Medusæ* and some fine *Beroës*; but they almost all escaped, as we had no net for catching them. One *Beroë* passed us nearly as large as a lemon. One or two of smaller size were caught. Mr. Alder took a drawing of one of them, and on comparing it with *Bolina Hibernica*, so well described by Mr. Paterson of Belfast, who first found it in Ireland, I was glad to find that we had fallen in with this beautiful creature among the Scottish Isles.\* It differs from any of the *Beroë* tribe I had seen before, in having in the upper part ear-like ciliated projections, which give it great elegance of appearance. Along the edge of the upper convolutions there was a dark hair-like line, but whether immersed in the

\* See the figure of *Bolina Hibernica*, p. 326.

substance of the body, or whether free and capable of being extended, from the imperfect state of the animal, we could not determine. The likelihood is, that it is not free, as Mr. Paterson does not mention it. This was quite a day for *Beroës*—quite suited to their fragile frame, the sea being smooth as glass. To us, who enjoyed a slight artificial current from the motion of the boat, the day was delightful. I am fond of warm, sunny weather, and I found not the heat too much; but in many places ashore the heat was broiling. In Ayrshire, the mercury at mid-day stood at 84 degrees in the shade. At Whitehouse, Lamash, it was at 80 degrees; and Mr. Paterson told me, that the evening before, at seven o'clock, it was at 76 degrees. I called in the evening; and sauntering on such an evening with the worthy family among their tasteful parterres, where many of the flowers are tender exotics, a person is apt to suspect that somehow or other he has wandered into a tropical clime; but, after all, he is well pleased to find that he is among Highland hills, and leal, kind Scottish hearts.

On returning to our lodgings I had the pleasure of finding that my excellent friend, the Rev. Mr. Stevenson, from Ayr, had come to spend a day with us. He came for a botanical ramble. If his clerical engagements left him any leisure, he would wish to recover and to increase the knowledge he acquired in early life in this department of science, when spending a summer in the Isle of Mull. Before we returned from our boating excursion he had made a considerable collection of plants in the neighbourhood

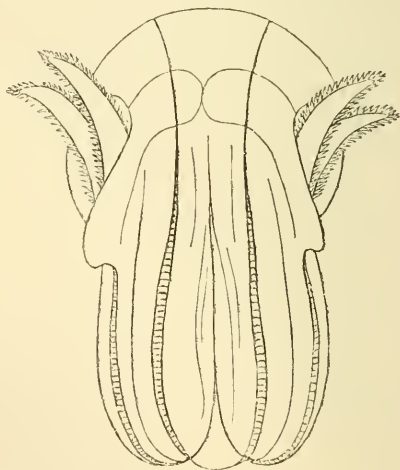
of Lamash. It was proposed that next day, after he had dredged with us for some time, we should set him ashore to botanize for an hour or two in the solitudes of the Holy Isle. But when next day came it put an interdict on that plan, as it was too breezy for dredging. We set out then in search of land plants, directing our steps to Penlester-burn, and to Ross-hill. We found nothing that was new to me, as I had often trodden the ground before; and we failed in finding some plants that I knew were once abundant in that locality. I searched in vain for a fine reddish variety of *Viola canina*, which I had cultivated for years in the manse garden. Nor could I find *Drosera Anglica*, and *Pinguicula Lusitanica*, which, many years ago, I had gathered on the moist acclivity of Ross-hill. I was glad, however, that several of the Highland plants were new to Mr. Stevenson, who greatly enjoyed the excursion. He has so wide a field of labour before him at home, and he is so willing to spend and be spent in his Master's service, that his friends are at times afraid of his being worn out. In seeing this faithful labourer in the vineyard snatching with delight a few hours of healthful recreation, I remembered the kind and considerate command of Christ to his disciples, recorded by Mark: "And the apostles gathered themselves together unto Jesus, and told him all things, both what they had done, and what they had taught. And he said unto them, Come ye yourselves apart into a desert place, and rest a while: for there were many coming and going, and they had no leisure so much

as to eat. And they departed into a desert place by ship privately." It is of importance to remember that Jesus was of the party; and if we wish our rest and recreation to be innocent and salutary, let us make a point of having Christ, though unseen, along with us. I must confess that I also remembered a ludicrous anecdote told me by a respectable old lady, which shows how differently actions may be viewed, according to the opinion we entertain of the persons by whom they are performed. When the late worthy Mr. Bonar, minister of Cramond, was a young man, he resided some time in the west, and was greatly respected and beloved. In a country place, not far from Paisley, a person observing a gentleman, with some ladies, ascending an adjoining hill, said to a woman whom he met, "Who is that going up the hill?" "It is the minister," was the response; "and it's just like him, idle, light-headed gomeril, flirting about and speeling hills wi' a set o' glaikit hizzies." "That's no *your* minister," said another person who was passing—"that's Mr Bonar." "Mr Bonar!" said she; is't him, honest man? Oh, I'm extraordinary glad to see him get ony wee amusement; he's weel worthy o't, honest man; he's wearing himself out wi' constant study and sae muckle preaching."

In searching for flowers near the base of Ross-hill, we were more than once reminded of Virgil's words, "*Latet anguis in herba*," for we saw two adders; but they hid themselves among the heather with all possible speed. The adders are surely becoming less numerous in Arran, for those were the only speci-

mens I saw during these hot days, in which they are so disposed to bask in the sun.

But our time was out. Farewell then, to *Beroës*, and *Medusæ*, and gaping *Limæ*, and fragrant flowers, and stinging serpents—farewell a while. It is just a twelvemonth, bating a week, since I spent the same number of days in Arran before, and if these visits are few, and brief, and far between, they have yielded us great enjoyment, and this has been not a little increased by the delightful weather with which we were favoured. We left Mr. Alder and Major Martin in Arran; and the following list was kindly furnished by Mr. Alder, containing the mollusca that were got by us all.\*



\* See Appendix.



## CHAPTER XXIII.

Revisit Arran along with the Rev. Dr. Brown and William Buchanan, Esq.—Dredging with Major Martin—Rarities found—Rare Algæ—Examined and admired by our party at home—Fry of Sucker-fish described—Cheerful, religious companions enhance the pleasure of an excursion—" Church in the Inn "—Rich shelly sand.

I THOUGHT, when I left Lamash in the beginning of June, that I had taken farewell of Arran for that season. In the middle of July, however, when a busy time was over, I was much gratified, when Mr. William Buchanan of Glasgow, having made arrangements to take his worthy and much-loved minister, the Rev. Dr. Thomas Brown of St. John's, Glasgow, to Arran, for the benefit of his health, kindly asked me to accompany them. Mr. Buchanan is well known for his great worth of character, and more particularly for his great kindness and active benevolence; and who is there in Scotland to whom Dr. Brown is not favourably known by report? and to whom can he be personally known without being greatly beloved and esteemed? How many are there who would have gladly embraced the invitation that was given me!

The party was rendered more lively and agreeable by the addition of two amiable and intelligent young gentlemen, Mr. Buchanan's sons; and latterly, of two no less intelligent and amiable young ladies—his daughter and niece. Mr. Buchanan loves his minister with filial affection, and we were all animated with the desire that, through God's blessing, the little excursion might contribute to the restoration of the worthy Doctor's health.

After a fine sail, we reached Arran early in the forenoon, and the remainder of the day was very pleasantly spent by us—some walking, some driving, some dredging. Next day was lovely—quite a day for our enjoying Arran—quite suited for an invalid, like our dear friend, who had a nice drive with his attached friend Mr. Buchanan—quite suited for the young gentlemen to ascend Goatfell—and as well suited for myself, who had arranged to meet Major Martin, for some hours' dredging in Lamlash Bay. I went in the Ardrossan steamer from Brodick, and found the Major in a fishing-boat, as I expected, at the mouth of the loch. When his boat came alongside of the steamer, I am sure that many of the passengers would wonder what the gentleman was about. He had already had a good haul; the contents were spread on a table before him, and he seemed seated at a repast. It was the feast of shells, and some might imagine that he was looking for oysters, among the mass of coral (*Millepora polymorpha*) spread out before him. I was soon in the boat beside him, seated at the board, to share in the

feast. The steamer proceeded on her way to the harbour; and we shot our dredge for a fresh haul. What, however, was a feast to those engaged in it, may soon pall on the appetite of those who only read of it. I shall not, then, trouble my readers with any lengthened account of our operations. Some of the rarer things that we got may be mentioned. We got several specimens of *Amphidotus roseus* in a live state. It seems to delight in deep water, whereas we dredged not one example of *Amphidotus cordatus*, so common in the sand in shallow water. We got many fragments of what seemed a large *Echinus*, which we conjectured might be *Spatangus purpureus*, as we afterwards found it was. Several live specimens of *Echinocymus* occurred, as also of *Asterina gibbosa*, *Solaster papposa*, *Goniaster Templetoni*, *Cribella rosea*, *Uraster glacialis*, *Luidia fragilissima*, *Ophiura albida*, *Comatula rosacea*, &c. The rarest mollusc we got was *Trichotropis borealis* in a live state. It is a spiral shell with a curious hispid epidermis. This was quite new to us. We got valves of a large non-descript *Nucula*, and living specimens of *Nucula margaritacea*; also a few examples of *Corbula striata*, young;—some fine examples of *Lima tenera*, and a few of *Lima fragilis*, and one example of *Bulla cylindracea*, and not a few of *Kellia suborbiculata*. The only rare Alga we at the time observed, was *Bonnemaisonia asparagoides*. I found afterwards that I had got one that was new to Scotland, without knowing that I had got a rarity. Nearly two months after, I was favoured with a letter from Dr. W. H.

Harvey, Trinity College, Dublin, enclosing a specimen of *Peyssonelia Dubyi*, a very interesting plant which he had dredged in the west of Ireland, and asking me to look out for it next time I dredged. Next day I happened to be out for some hours with Major Martin in Cumbrae, near Milport, and I had the pleasure of getting, encrusting an old shell, what seemed to me like the *Peyssonelia*, only that it was olive-coloured instead of reddish. In overhauling my Lamlash shells, I observed one little patch which had both the colour and the striations of the *Peyssonelia*. I sent them both to him, and I had the pleasure of hearing from him to-day, that the Lamlash Alga is the veritable *Peyssonelia* in a young state. I was well pleased, however, to hear that the Cumbrian was not *Peyssonelia* but "*Padina parvula* (Grev.), an equally interesting species," a rare Alga not before observed in Scotland. Our two active boatmen enjoyed the sport, and seemed very anxious that we should make discoveries. The winged hours passed quickly by. The steamer, punctual to her hour, approached us, when I was taken aboard, and landed at Brodick in good time for dinner.

I brought some of the live captures along with me, which greatly interested our assembled party. We got a basin filled with sea-water, and placed in it the living contents of my vasculum, that we might see some of their evolutions before we restored them to the sea. The *Echinus sphæra* (sea-urchin) immediately gave symptoms of life by sending forth from amongst its prickles hundreds of suckers, which it

could lengthen at will ; every one of them having a terminal disc of adhesion, by which it could lay hold of the side of the basin, and draw itself up, or along, so that, aided by its prickles it could walk slowly, as it does, on the rocks in search of food. A *Spatangus* (sea-egg) also was soon at work. The bristles with which it is covered are underneath like little spades and shovels, for burying itself under the sand ; but alas ! they were found rather at fault, as they could make no impression on the hard basin. A scallop (*Pecten opercularis*) treated us occasionally with a few of its rapid zig-zag movements. A pretty *Lima tenera*, not to be behind its neighbours, bounced about very gracefully. A beautiful *Goniaster Templetoni* (Templeton's sea-star), from any symptoms of life exhibited by his scarlet covering, might have been thought dead or dormant ; but by his slipping slowly along we saw that the numerous spines underneath were at work. I bear him a grudge. The rarest shell that I had was put into the same basin, that I might see the mollusc that inhabited it. Next morning it was amissing, and could nowhere be found. It may have made its way out of the basin ; but it afterwards occurred to me that the star-fish may have gobbled it up, in the same way as I had seen one of the same species devour a periwinkle. This was an after-thought. Had I thought of it at the time I would have instituted a search for stolen goods.

There was one thing which we all admired, though at first when I saw it in the boat, I could not con-

ceive what it was ; nor was it till it had appeared in all its phases, that I discovered what it was in reality. On opening a scallop, I observed one of the valves lined with what seemed *Cellepora pumicosa*, a zoo-phyte ; but it was gelatinous, so that I concluded that it might be some kind of spawn. On opening another scallop, I found that the white dots or cells had become blackish-blue. On opening a third, I found that the generality of the dots, instead of adhering to the shell, were disengaged, and were swimming in a little water in the concave valve, like a number of sparkling diamonds. On applying a magnifying glass I found that I had got a shoal of little fish, and that their sparkling eyes were the diamonds. I saw, moreover, that round the edge of the patch many of the dots were still adhering ; and that round the head and eyes, which were prominent in the centre, the body of the little fish was wrapped, pretty much in the manner in which the cook sends up whittings to table, with their tail in their mouth, very much, I am sure, against the will of the whittings, if they had had anything to say in the matter ; but a most easy and elegant position for these nascent gelatinous fish. It was in the disengaged state, however, that they chiefly excited our admiration. By the aid of the lens we saw that the two eyes were the sparkling diamonds ; that the body, which consisted of transparent gelatine filled with grey granules, dwindled away towards the tail, so that each little fairy fish of half an inch in length resembled a pair of tiny scissors. Prosecuting the investigation, I found them half-grown, and at

last full-grown, so that I had the satisfaction of ascertaining that the little beauties we had so much admired were the fry of *Lepidogaster bimaculatus*, the little two-spotted sucker-fish. How wonderfully the Lord teaches the feeblest of his creatures to provide for their own safety and that of their offspring! What a charming nursery this little sucker-fish selects for itself! It is rather nice in its choice. It is not an old, weather-beaten scallop that it takes possession of, but one that is fresh without, and smooth and pure within. After it has entered, it certainly has some way of gluing the valves together, for it is not without difficulty that they can be torn asunder. Neither is it imprisoned though the apartment is thus shut against intruders; for closely as the valves cohere, there are some little apertures about the ears of the shell through which it can make its exit with its numerous family, or by which such little creatures as they feed on may, in their simplicity, enter. The good pastor and his worthy elder were much delighted with this beautiful manifestation of the great kindness of God towards these embryo fishes.

When a person who has any religion, wishes greatly to enjoy a pleasure excursion, let him try to join a party who are not only religious, but more so than himself. More than once have I felt the benefit of doing so. I shall never forget the pleasure I experienced in a delightful little excursion, commencing at Dumbarton and extending to Lochlomond, Lochgoilhead, and the finest scenery in that direction, along with two of my Scottish clerical friends, and two interesting

young Prussian divines, M. Gimbert and M. Westermere, at that time travelling in this country for religious and ecclesiastical information. We were all rather young and active pedestrians, and we must have been very blind, or very phlegmatic, if, in the fine weather we had, we could have traversed some of the finest scenery in the world without admiration. But the pleasure was of a much more elevated kind, in consequence of the devotional spirit we were enabled to maintain, which led us to feel that it was our Father's works that we were admiring—even that God who had proved himself our heavenly, reconciled Father, by the unspeakable gift of his Son.

I think we felt this to be the case, also, on the present occasion. We all had a lively relish for the beauties of nature, but this was greatly increased by our morning and evening devotions, especially when guided by our heavenly-minded friend, Dr. Brown. He is well-known to be eminently a man of prayer, and it was delightful to hear him pouring out the effusions of his warm and pious heart, blessing the Lord for the wonders of divine mercy and grace; for the atoning love of Jesus; for the hopes of heaven, which, through faith in Christ, we are permitted to cherish; and then raising his thanksgivings for all our social enjoyments; and for the happiness we had been experiencing in admiring some of the fairest portions of this earth which he created; and in contemplating the wonderful goodness, and wisdom, and power, manifested in the works of his hands.

We have heard of “the Church in the army,” and



“the Church in the navy,” and glad are we to hear of them; but here we had the Church in the inn. We were tabernacling in the inn at Brodick; but though it was the busiest time of the season, and the inn, I believe, generally full, we often said, “How quiet we are!” There was no noisy bustle—no roar of riot; but everything seemed nearly as quiet as in our own habitations. Not only our own party assembled for morning and evening worship, but there generally met with us portions of two other families, temporary residents like ourselves in the inn. Though not of the same denomination, they were, I believe, as I trust we also were, of the Church of Christ. They all knew Dr. Brown’s worth, and knew their duty, and evidently valued the privilege.

All pursue happiness; but all seek it not in the same way. “*Dum vivimus vivamus*,” said many of old. Alas! for Horace, who, knowing the rapid flight of time, could advise to spend it in drinking, or in preparing wine for others, saying,

“*Sapias, Vina liques*,” . . . . “*Dum loquimur, fugerit invida Ætas. Carpe diem, quam minime credula postero*.”

“Let us crown ourselves with rose-buds before they be withered,” said the voluptuaries of old; “let no flower of the spring pass by uncropped;” let us make the best of this fleeting life; “let us eat and drink, for to-morrow we die.” Even on the ground of the highest enjoyment of life, let us “live by the faith of the Son of God, who loved us and gave himself for us.” How much do the following beautiful lines of

the pious Doddridge commend themselves to the taste and sound judgment of the believer!

(“ *Dum vivimus vivamus.*”)

“ Live while you live,” the Epicure would say,  
 “ And seize the pleasures of the passing day.”  
 “ Live while you live,” the sacred preacher cries,  
 “ And give to God each moment as it flies.”  
 Lord, in my life let both united be—  
 I live in pleasure when I live to Thee!—

“ *Carpe diem,*” says Horace. It is a noble advice, if rightly acted on. I am tempted to insert the following lines, for which I have a liking, chiefly, I suppose, because I heard them often sung by a dear young group, now in part scattered over the face of the earth :—

The taper burns—the moments pass,  
 The gliding sand slips through the glass;  
 And soon the rapid stream, alas !  
 Of life shall cease to flow.

The taper burns—its flame is bright;  
 O waste not, then, the joyful light;  
 For quickly comes the dark, dark night,  
 Our shortening day to close.

The taper burns—Time \* hastes away;  
 Her forelock grasp—she will not stay;  
 Nor angel’s wing o’ertake her may  
 One hairbreadth even gone by.

Prize life’s fleet moments,  
 Fast the wasting taper burns;  
 Prize—the flying moment prize;  
 It flies :—and ne’er returns. D. L.

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\* Time made feminine, because Horace, where he says, “ *carpe diem,*” speaks of the flight of “ *invida Ætas.*”

We have wandered far from the business in which we were engaged—namely, examining the contents of my vasculum, transferred to a basin of seawater. We had found a shoal of miniature fishes ensconced within the valves of a scallop; and so very minute were they, that they found “ample scope and verge enough” in the *sea* which the concavity of a valve contained. On examining the other shells, Mr. Buchanan found an old *Venus decussata* which had not been opened, and the opening of it taught me a lesson which I wish I had learned earlier in the day, for several shells of the same kind had been cast overboard, because they were old and weather-beaten. When this one was with some difficulty opened, we found that it contained what seemed a cluster of pearls. It was a nest of the beautiful little mollusc *Kellia suborbiculata*. Here, again, we found another little creature instinctively taught by Him who formed it, to seek protection from the buffeting of the billows. Its own beautiful habitation is exceedingly fragile, but not so the stout bivalve, in which we found a colony of young and old, from a line to half an inch in breadth. Let not the dredger allow a single old shell to pass through his hands without strict scrutiny, for we afterwards found some of the rarest shells in these unsuspected, but secure lurking-places.

I may here mention that, remembering how much the shelly sand had been prized which I got in Lamlash Bay two years ago, when I was along with Mr. Smith of Jordanhill, I was very desirous of getting some

more of it on this occasion, when I was along with Major Martin. Many a time the dredge came up without any of it, but when any appeared, I deposited it in a bag, which I brought home with me, expecting that it would yield some rarities. Nor have I been disappointed. I have not had time to examine above a handful of it myself, but even in that small quantity I got several very rare shells, and two or three that were quite unknown to me. I sent small bagfuls of it to Mr. Alder, Newcastle; Mr. Bean, Scarborough; and Mr. Thomas Gray, Glasgow; and these gentlemen concur in saying that in minute shells, especially *foramenifera*, it is exceedingly rich. Mr. Bean says, that in these little shells it is beyond comparison the richest he has ever examined. They all say that they have got shells in it new to them. A very distinguished conchologist wrote to me this summer, that a friend had given him a specimen or two of *Lagenula striata*, a shell which he had never found in all the sand he had examined. I must send him a handful of the Lamplash sand, for Mr. Bean heads his list of shells found in it with—" *Lagenula striata*, six hundred specimens!!!"\*

\* See Mr. Bean's list in the Appendix.

## CHAPTER XXIV.

Go to see the capercaillies—Description of these interesting birds—Visit Brodick Castle—Some account of it—Visit Glen Sannox—The Barytes Mill—The wildness of the Glen—Account of a Prayer-meeting at Brodick—Conclusion.

Two of our numbered Arran days had passed away. On the forenoon of the third, we went to the game-keeper's, above the castle, to see the collection of *Tetrao urogallus*, the capercaillie or cock of the wood, which the Marquis of Douglas and Clydesdale is endeavouring to restore to Arran, where it was once common, as in all the wooded districts of Scotland. There is something interesting in the history of these beautiful birds, as being once natives, and gradually extirpated, somewhat in the way that the human aborigines in many countries have been rooted out. So long as the woods flourished, they could bid defiance in so far to the cruel arts of man; but when the woods were cut down, or perished through neglect, the poor capercaillies, being at once deprived of food and shelter, either died of hunger, or fell by the arrow or the gun of the sportsman. We learn that they continued in the woods in Strathspey till 1745, a

memorable year in Scotland, and that they were seen in the woods of Strathglass in 1760. They were not long extinct; for early in the present century attempts were made to restore them to Scotland from the Norwegian forests, where they still abound. The attempt, I understand, has been pretty successful in the north of Scotland, where there are extensive forests; but in Arran we cannot, I fear, for many years to come, hope to see them otherwise than as interesting prisoners; for, when liberty is given them, there is not at present sufficient extent of wood to afford them the necessary protection and nourishment. Everything, however, is done to render them comfortable in their state of imprisonment. They are in the open air, in a portion of the fir plantation, enclosed with long stakes, and over-arched with spars; thus forming an aviary suited to the size and tastes of the occupants. When Mr. Croll took us into their enclosure, they had been aware of our approach, and had concealed themselves in the thickest and remotest part of it, from which they made their escape as soon as we drew near. By following them from place to place, in spite of their shyness, we got a very good view of them. They are beautiful fowls. A full-grown one is nearly three feet in length, and when the wings are expanded, almost four feet in breadth, weighing from ten to fifteen pounds. The bill is very strong, and of a light colour. Over each eye there is a naked skin of bright red, becoming a brighter scarlet at the pairing season. The feathers on the head and throat are darker than those on the body, having, as well as the

back and wings, elegant transverse dark markings. The breast is black, with a tinge of glossy green. We are now speaking of the cock; for the hen is considerably smaller, and of a much lighter colour, so that a person seeing her for the first time, would take her for a bird of a different species. They were moulting when we saw them, so that they did not appear to advantage. When they are in good health and spirits, the cock displays a variety of attitudes, erecting his feathers on his head, swelling his neck, elevating his tail, trailing his wings, and marching about somewhat like the turkey-cock, though with more of true stateliness, and less of mock-majesty. They are daily fed with oats, and barley, and Indian corn; and a supply of fir branches is given them every morning. This is their favourite food in a wild state; and we saw that they had completely stripped the branches which a few hours before had been cast in to them.

From the capercaillie aviary we proceeded to the castle, through which we were conducted with great civility by the person who had the chief superintendence. Many workmen were still employed in and around it, bringing to a close the additions and repairs which for a considerable time have been in progress. Even in this unfinished state, I was much more pleased with the castle than I expected. The front view of it from the bay is not the best. I would have liked something at the north end to correspond with the new tower at the south end—not a similar tower, to produce perfect uniformity, but something elevated, to preserve the balance of power. It is only in the front

view, however, of it that this want is felt. When seen from any other point of view, it has a very fine effect. On this occasion we approached it from the north, and came on the remains of a tower, which I would have been sorry to see swept away, as it had been erected by Oliver Cromwell. I am glad of the increasing respect for the memory of Old Noll. Had all our princes had as pious hearts, and all our statesmen as much British pluck, as the much-maligned Protector, our Protestantism would have worn a nobler aspect; and the horns of the "beast," instead of being proudly protruded, as of late, would have been cautiously retracted, like the slimy horns of the cowardly snail. Cromwell's old tower is preserved, and this more than reconciles me to any want in the balance of power in the front view of the edifice. I shall not attempt to give a description of the castle, either internally or externally. I may, however, say, that on ascending one flight of stairs, there is now a very fine suite of apartments—especially drawing-room, dining-room, and an intervening room as a library, which, I was glad to learn, was soon to be well stored with books, and adorned also, I hope, with some of those paintings by the great masters, in which the noble family of Hamilton is so rich. We were greatly pleased with the grandeur of the ornamented ceilings of these apartments, in which there were many shields, with the armorial bearings of the various branches of the family. We were told that they were to be gilded. This will be splendid; but I question whether it will be more to my taste. There is a chaste and simple



elegance in the pure white. However, the work is only in progress; and there is a well-known Scotch proverb, that "*fules and gentles*" should not be shown half-finished work, and as, in the circumstances, there is nothing very complimentary in being included in either of these classes, I shall attempt to escape with the cautious remark, that much may be said on both sides. The newly erected tower is at the south end of the castle, where the principal entrance and entrance-hall are now to be. The staircase, which leads from the entrance-hall to the upper apartments, is enriched with a magnificent oaken balustrade. The situation of the castle is very commanding; and when the grounds are dressed up; the new approach from the south opened; the garden re-modelled, under the fine taste of the Marchioness of Douglas—stocked with the finest fruit, and with a first-rate collection of rare and beautiful flowers, in which I have been told she delights—there will be in this princely residence almost everything that this world can give to promote happiness: and when the earth saith, It is not in me; and the sea saith, It is not in me, may its noble inmates have, not only "the fatness of the earth, and plenty of corn and wine," but may they also have "the dew of heaven from above," and "the blessing of the Lord, which maketh rich and addeth no sorrow."

On the fourth and last day of our abode in the island, we proposed visiting Glen Sannox; but though the morning had been fine, a watery cloud disengaging itself on a sudden from the top of the mountains, poured down such a torrent, that the jaunt for some

time was impracticable. After dinner, however, it cleared up, and though it was then late enough, off we set in two cars. As the road has been gone over by us already, I shall not linger on it now. Having reached the mouth of the glen, we alighted and walked to the *Barytes* Mill. Though the works have been going on here for a number of years, I had never before visited them, and we had considerable pleasure in being shown through the mill, and of seeing the mode of procedure. The *Barytes* or *terra ponderosa*, as it used to be called, is dug out of the earth on the hill-side, and cast into the mill, where it is ground to powder. In this state, after being violently agitated in vats full of water, the mass is allowed to subside, and the *Barytes*, being much heavier than the other materials with which it is mixed, sinks to the bottom, when the upper part of the deposit, which is both lighter and of a darker hue, is separated from it. When this process has been several times repeated, the *Barytes* alone remains as a pure white powder, in which state it is packed up in barrels ready for the market. It is chiefly employed, we were told, in oil-painting, as a substitute for white-lead. It is much cheaper, and regarded as an inferior article, though in some cases it is preferred, I am told, to white-lead, as it retains its colour better. It is well that this *Barytes* Mill was not placed in the centre of the glen, as it would thus have destroyed one of its charms—the utter solitude. As the afternoon was far spent, we had to rest satisfied with a view of the glen from this position; and as the state of the atmosphere after

the rain was very favourable, we were all much gratified in contemplating the savage grandeur of the scene.

Among the other pleasures I enjoyed, I must not forget the pleasure of being at a prayer-meeting at Brodick. It was a weekly meeting, which I was glad to find is kept up there during the summer, and which, I doubt not, is found very beneficial. Brodick is a place of much resort, and though many who visit it care for none of these things, there are always some who feel their need of spiritual refreshment, and who delight to go to the place where prayer is wont to be made. During the summer months, it scarcely ever happens that there is not a minister on a visit, ready to preside. On the passage across I had been asked by a pious lady to officiate, and I was glad to find at the place of meeting another minister willing to take a share of the duty, so that he opened with prayer, and I gave the address. From the number and aspect of those who attended, I would hope that there is much good done. The proportion of truly pious persons is greater than at what may be called canonical meetings, for as absence is not visited with so much blame, fewer come merely to save appearances, and more come because they are really hungering and thirsting. Of the natives of the island there were present on this occasion a considerable number of rather aged men, and not a few sedate pious-looking females. And there was at least an equal number who evidently were strangers. Among those present I observed an elderly lady who seemed exceedingly feeble. As she was placed near me, I at the close assisted her

to her phaeton, and yet I did not, till next day, know that I had met with her before. She was the widow of a respectable elder in one of our city churches, where I had often officiated. Her worthy and beloved husband had been taken from her, and so much had she felt the bereavement, that she had nearly sunk under it. She seemed ten years older than when I had seen her little more than six months before, so that I did not know her even when I was conversing with her. She told me, when I visited her next day, that the prayer-meeting had been to her a time of refreshing, as she had never been able to attend church since her great bereavement. Others present must have had their sorrows and trials, unknown to us, but well known to God; and though the speaker was shooting a bow at a venture, the Spirit could take the word, and bring it home to the heart, causing it to accomplish that whereunto it was sent.

I must now bring to a close my rambling account of Excursions to Arran. Though I have written as an amateur naturalist, I have wished to bear in mind that I have a higher vocation. While I have sought, according to my feeble ability, to cherish in others the love of natural science, far more have I wished to cherish in myself and others the love of the God and Father of our Lord Jesus Christ. Were naturalists, absorbed in the study of nature, to forget the God of the Bible, they would be more guilty—because amidst Gospel light—than those of old who, instead of worshipping the one living and true God, worshipped birds, and four-footed beasts, and creeping things. If

we give our heart to the study and admiration of the creatures, more than to the love and worship of their ever-blessed Creator, then are we making these creatures our idol-gods; and such idolatry must, in the end, prove our ruin. However amiable we may be, if the great salvation is not first and chiefly sought, we are neglecting this great salvation; and if we neglect the great salvation so dearly bought, and so freely offered, how can we escape? The brightest cherub could not tell us how to escape; for escape is impossible. We are casting from us the only remedy, and shutting the door against the only Physician, choosing strangling and death rather than life. Not eagerly to lay hold on this salvation, is to neglect and despise it, and, at the same time, to despise God who sent his Son; and Christ, who shed his precious, precious blood, that it might be freely offered to the perishing. “Despisest thou the riches of his goodness, and forbearance, and long-suffering, not knowing that the goodness of the Lord leadeth thee to repentance? but according to thy hardness and impenitent heart, treasurest up for thyself wrath against the day of wrath, and revelation of the righteous judgment of God?” May none of us deceive ourselves, by imagining that we are religious, and love God, because we delight to contemplate the perishing works of his hand. It is our duty to contemplate these works—they are “wonderful, and sought out of all them that have pleasure therein;” but if we neglect the greatest of all his works, the work of redemption through the blood of his Son, independent of the guilt,

we are more foolish than the man who would admire the midnight taper, but would refuse to open his eyes to behold the glory of the "greater light that rules the day." Rejecting Christ, "there is no farther sacrifice for sin, but a certain fearful looking for of wrath, and of fiery indignation, to consume the adversary."

Pardon, I entreat you, gentle readers, these parting words of admonition. By many they may not be needed: may they be taken in good part by all! The study of nature may be both pleasant and profitable, if conducted in a right spirit. But the hour is at hand, both to you and to me, when the most thorough knowledge of all the mysteries of nature would afford us neither profit nor pleasure, unless we have learned to know the God of nature as our reconciled God and Father through Jesus Christ. But if we have known him as a God of mercy, through the blood of the everlasting covenant, then, though we must pass through the valley of the shadow of death, it is to enter that land where there is neither death, nor sin, nor sorrow; where we shall hunger no more, neither thirst any more, neither shall the sun light on us, nor any heat. For the Lamb which is in the midst of the throne shall feed us, and shall lead us to living fountains of water; and God shall wipe away all tears from our eyes!

"Acquaint thyself with God, if thou would'st taste  
His works. Admitted once to his embrace,  
Thou shalt perceive that thou wast blind before;  
Thine eye shall be instructed; and thine heart,  
Made pure, shall relish, with divine delight  
Till then unfelt, what hands divine have wrought."

COWPER.

## APPENDIX

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THOUGH I shall give as full lists as I can of the fauna and flora of Arran, I am very sure that they all could be greatly enlarged by any naturalist residing for a considerable time in the island. I shall begin with the list of insects. It is the same as that in the New Statistical Account of the parish of Kilbride; for I have in my possession the original list, which I procured for that work from my late lamented friend, Dr. Connel of the High School, Glasgow, who was not only a good entomologist and a distinguished mathematician, but what is better than both, a good, kind, worthy man. My talented friend, the Rev. Dr. MacNaughton, gives me the credit of furnishing some of the lists in his New Statistical Account of the parish of Kilbride, in Arran; and as I have made no list of the Arran birds, I am sure that he will make me welcome to his. It is right that I should acknowledge taking it, lest I should be ranked in the jackdaw tribe. An Arran minister of amiable simplicity, once said to me, "Do you know Dr. S—— of S——?" I answered in the negative. "He is a strange person," he added; "I am told that he goes through the Highlands, and borrows manuscript sermons from the ministers, and preaches them at home. He borrowed one from me,

which he never returned. I heard of his preaching it before the professors and students in the College Chapel, Glasgow;" adding, with great naiveté, "it was one of Stillingfleet's!" It is unnecessary to say, that this able sermon-writer was not Dr. MacNaughton.

*Birds.*—"Of the *land*-birds, the most conspicuous and important are the red and black grouse, both of which are very abundant. The ptarmigan is occasionally found near the summits of the granite mountains. Pheasants, which were introduced some years ago, are now numerous, and spreading over the island. Eagles, falcons, hawks of various species, hooded and carrion crows, ravens, owls, magpies, have been diminished in number, by premiums offered for their destruction. The ring-dove, the rock-dove, the cuckoo, the swallow, the martin, the sand-martin, the swift, the missel thrush, the common thrush, the redwing, the fieldfare, the blackbird, the whinchat, the redbreast, the hedge and house sparrow, the yellow-hammer, the common bunting, the linnet, the chaffinch, the wagtail (white, grey, and yellow), the wren, are all common. The rarer *land*-birds are the kestrel, the goat-sucker, the ring-ousel, the water-ousel, the wheat-ear, the golden-crested wren, the goldfinch, and the starling. Among the *water*-birds, those that occur most frequently are the curlew, the water-rail, the wood-cock, the snipe, the lapwing, the green plover, and the ringed plover. The bittern is met with occasionally. Among the *water*-birds that frequent the coast, the following occur: The oystercatcher, the cormorant, the shag, the solan goose, the wild duck, the teal, the wild goose, the razor-bill, the puffin, the northern diver, the common gull, the silver gull, the guillemot, and the tern."

*Insects.*—The following list of insects was made by the late Dr. Connel; but it was made in July 1836, the most



unfavourable July for the entomologist that had occurred for many years. Dr. Connel was a much-loved and most successful teacher, first in the Academy at Irvine, and afterwards in the High School of Glasgow; in both which places he was much respected. He was a very zealous student, and his book on the Integral and Differential Calculus, is sufficient proof that he was a first-rate mathematician. It might have had a favourable effect on his health if he could more frequently have enjoyed short seasons of relaxation from private study, and from the faithful and diligent discharge of public duty—spending these brief periods in the country in entomological pursuits, in which at one time he engaged with great ardour, though latterly his severer studies were prosecuted even in the country. By following his entomological pursuits in Arran, he gave some of the people a strange idea of his character. On one occasion, having started a rare butterfly among the hills, he pursued it with insect-net in hand, and getting hot, he threw off his coat and continued the chase, till he had made the wished-for capture. He then returned to pick up his upper garment which he had cast from him, but it was nowhere to be found. Looking round in every direction, he at last discovered that some cows that he had passed on the hill-side, had eaten it up stump and rump, except some rags still hanging from their mouth as proof positive against them; so that he had to wend his way homewards *sans* coat—thankful, it may be, that it was not also *sans culottes*, though this would not have been very extraordinary in the Highlands.

Returning to Arran the succeeding year, on a day that was too cold for entomological pursuits, he engaged in another favourite amusement in one of the numerous trouting streams. Meeting a Highlander, who had been angling, like himself, the Doctor invited him to partake

of some good cheer which he had brought in his pocket. During the repast, the Highlander said to him, "Ye'll no belang to this place?" "No," said Dr. Connel, "I do not." "Ye'll be frae Ayrshire or Greenock, maybe?" "No," was the reply. "Ye'll be mair to the eastward—frae Edinburgh, or maybe frae Glasgow?" "Yes," said the Doctor, "I generally live in Glasgow." "Its a big town, Glasgow—I hae been ance there mysel'. Ye'll never hae been in this place afore?" "O yes, I have often been in Arran—I spent some time in it last year." "And where are ye staying noo, if ye please?" "I am staying at \_\_\_\_\_" "I ken the place; ye'll never hae stayed there afore?" "Yes, I stayed there last year also." "Save us!" said he, looking aghast, "ye're no the daft man that was there last year?" "Yes," said the Doctor, laughing, "I am just the daft man." He looked at him with a very suspicious eye; but as the meat and drink were very good, and very acceptable on so cold a day, he continued to enjoy the repast; convinced that though the gentleman might be *daft*, he was neither unkind nor *uncannie*.

He is not the only naturalist in the west who has fallen under suspicion of being rather "wrong in the mind." Captain Carmichael of Appin, being often seen by the country people wandering on the shore, and even wading in the sea, taking up handfuls of trashy sea-weeds, and after examining them, casting them back into the sea, or, what was worse, carefully securing them in a tin-box, as if they had been treasures, they came to the conclusion that he was decidedly wrong in the head. However, as he was very kind and peaceful, they regarded him with compassion. A stranger, walking on the shore one day with a person belonging to that neighbourhood, seeing the Captain wading in the sea, with his shoes and stockings in one hand, and some sea-weeds in the other, said to his

companion, "Who is that?" "O," replied the other, "that is the Captain. Poor man! he is no himsel'; he is far wrang—very far wrang to-day, poor man; for it is full moon!"

## INSECTS (LEPIDOPTERA).

<i>Cynthia cardui</i> , . . . . .	Not common. Taken near Brodick and King's Cove.
<i>Hipparchia blandina</i> , . . . .	An Arran specimen of this insect first announced to entomologists that it was a native of this country. (And we may add, that soon after this, an entomologist took sixty, and sold them in London for sixty guineas.) It is far from being uncommon in Arran.
" <i>polydama</i> , . . . . .	Abundant.
" <i>pamphilus</i> , . . . . .	
" <i>hyperanthus</i> , . . . . .	Three specimens, taken at Bennan-head.
" <i>janira</i> , . . . . .	
" <i>semele</i> , . . . . .	Found chiefly on stones exposed to the sun-beams, and sheltered from the wind.
<i>Polyommatus albus</i> , . . . . .	The sea cliffs opposite Kilmerie parish church abounded for a few days with this, which is the smallest of British butterflies.
" <i>Alexis</i> , . . . . .	Abundant everywhere.
<i>Vanessa urticae</i> , . . . . .	Confined almost exclusively to the eastern side of the island.
<i>Pontia brassicae</i> , . . . . .	Abundant everywhere, except on the west coast and in the centre.
" <i>rapae</i> , . . . . .	Chiefly around Brodick.
" <i>napi</i> , . . . . .	Chiefly around Brodick.
<i>Melitaea Euphrosyne</i> , . . . .	On high grounds between Brodick and Shisken.
<i>Argynnis Aglaia</i> , . . . . .	Not uncommon.
<i>Lycana phlaea</i> , . . . . .	Found at Shildag.
<i>Arctia caja</i> , . . . . .	Common.
<i>Cerura vinula</i> , . . . . .	Rare.
<i>Macroglossa stellatarum</i> , . . .	A specimen taken near Bennan-head.
<i>Minoa chorophyllota</i> , . . . .	Found at Kilmerie.
<i>Anthrocrea filopendulae</i> , . . .	Rare. Found near Bennan head.

The following were obtained, about ten o'clock, on the ferns and brambles near the sea-coast, between Bennan and Kilmorie. The locality was visited for a few minutes during five or six evenings, the weather not permitting longer or more frequent visits:—

<i>Spilosoma menthastri.</i>	<i>Fidonia atomaria.</i>
<i>Hypena proboscidalis.</i>	<i>Cabera exanthemata.</i>
<i>Mamestra brassicæ.</i>	" <i>pusaria.</i>
<i>Hepialus velleda.</i>	<i>Actebia porhyrea.</i>
<i>Rumia crotsegata.</i>	<i>Xylina putris.</i>
<i>Ophiusa lusoria.</i>	<i>Harpalyce fulvata.</i>
<i>Leucania pallens.</i>	<i>Margaritia verticalis.</i>
<i>Hepialus humuli.</i>	<i>Botys forficalis.</i>
<i>Plusia chrysitis.</i>	<i>Anarta myrtilli.</i>
<i>Episema cœruleocephala.</i>	<i>Pterophorus punctidactylus.</i>
<i>Leucania impura.</i>	<i>Nemeophila plantaginis.</i>
<i>Larentia chenopodiata.</i>	<i>Harpalyce sylvatica.</i>
<i>Harpalyce ocellata.</i>	<i>Plusia gamma.</i>

To the above may be added *Hipparchia ligea*, the Arran brown butterfly, the rarest of the whole, said to have been taken by the late Sir Patrick Walker near Brodick.

#### LIST OF RARER PHENOGRAMMUS PLANTS FOUND IN ARRAN.

<i>Alchemilla alpina,</i>	. . . .	Goatfell, &c.
<i>Althæa officinalis,</i>	. . . .	Struey rocks.
<i>Anagallis tenella,</i>	. . . .	Common.
<i>Agrimonia Eupatorium,</i>	. .	
<i>Allium ursinum,</i>	. . . .	
<i>Alisma ranunculoides,</i>	. . . .	
<i>Anthyllis vulneraria,</i>	. . . .	
<i>Arbutus uva-ursi,</i>	. . . .	Holy Isle.
<i>Avena planiculmis,</i>	. . . .	Goatfell.
<i>Bidens cernua,</i>	. . . .	Near Brodick.
" <i>tripartita,</i>	. . . .	Near Lamlash.
<i>Brassica Monensis,</i>	. . . .	Near Brodick, &c.
<i>Cakile maritima,</i>	. . . .	Southend.
<i>Carex pauciflora,</i>	. . . .	
<i>Carlina vulgaris,</i>	. . . .	Struey rocks.
<i>Convolvulus soldanella,</i>	. . . .	Black-water-foot.
" <i>sepium,</i>	. . . .	In several places.
<i>Cotyledon umbilicus,</i>	. . . .	Lamlash, &c.
<i>Crambe maritima,</i>	. . . .	Imacher Port.

<i>Cuscuta Europæa</i> , . . . .	Lamlash.
<i>Corydalis claviculata</i> , . . . .	On roofs of houses at Corrie, Sannox, &c.
<i>Drosera rotundifolia</i> , . . . .	Common.
" <i>anglica</i> , . . . .	Near Lamlash, &c.
" <i>longifolia</i> , . . . .	Near Lochranza, &c.
<i>Elymus arenarius</i> , . . . .	Brodick.
<i>Epipactis ensifolia</i> , . . . .	Whiting Bay, Slidderly, &c.
<i>Habenaria albida</i> , . . . .	Lochranza, &c.
" <i>viridis</i> , . . . .	Macherie.
<i>Eupatorium Cannabinum</i> . . . .	In many places.
<i>Fedia dentata</i> , . . . .	Lochranza.
<i>Galeopsis versicolor</i> , . . . .	In corn fields.
<i>Gnaphalium dioicum</i> , . . . .	King's-cross-point, &c.
<i>Gymnadenia conopsea</i> , . . . .	Near King's Cove.
<i>Helianthemum vulgare</i> , . . . .	Kildonan, &c.
<i>Helosciadium repens</i> , . . . .	Lamlash.
<i>Hypericum elodes</i> , . . . .	Lochranza and King's Cove.
" <i>androsæmum</i> , . . . .	In many places.
" <i>dubium</i> , . . . .	Whiting Bay.
<i>Inula Helenium</i> , . . . .	Struey rocks.
<i>Juncus biglumis</i> , . . . .	
<i>Lathyrus sylvestris</i> , . . . .	Struey rocks.
<i>Ligusticum Scoticum</i> , . . . .	Southend.
<i>Lithospermum maritimum</i> , . . . .	Brodick, &c.
" <i>officinale</i> , . . . .	Lochranza.
<i>Lobelia Dortmanna</i> , . . . .	"
<i>Listera ovata</i> , . . . .	Near Lamlash.
" <i>cordata</i> , . . . .	
<i>Malaxis paludosa</i> , . . . .	Near Brodick.
<i>Myrica gale</i> , . . . .	Common.
<i>Narthecium ossifragum</i> , . . . .	Common.
<i>Oenanthe Lachenalii</i> , . . . .	Corriegills.
<i>Pinguicula Lusitanica</i> , . . . .	In many places.
<i>Pulicaria dysenterica</i> , . . . .	Struey rocks.
<i>Pyrus pinnatifida</i> , . . . .	Near Lochranza.
<i>Ranunculus lingua</i> , . . . .	Lamlash.
<i>Raphanus maritimus</i> , . . . .	Southend.
<i>Rhodiola rosea</i> , . . . .	Near Lochranza.
<i>Radiola millegrana</i> , . . . .	Near Springbank.
<i>Salix herbacea</i> , . . . .	Ben Varen.
<i>Saxifraga stellaris</i> , . . . .	Goatfell, &c.
<i>Sedum Telephium</i> , . . . .	
<i>Smyrnium olusatrum</i> , . . . .	
<i>Solanum Dulcamara</i> , . . . .	In many places.
<i>Thalictrum alpinum</i> , . . . .	Ben Varen.
" <i>flavum</i> , . . . .	Whiting Bay.
<i>Typha latifolia</i> , . . . .	"
<i>Utricularia vulgaris</i> , . . . .	Loch Davie.

## RARER MOSSES FOUND IN ARRAN.

<i>Andræa rupestris.</i>	<i>Gymnostomum rupestre.</i>
<i>Anictangium ciliatum.</i>	<i>Hedwigia æstiva.</i>
<i>Bartramia fontana.</i>	<i>Hypnum aduncum.</i>
" <i>ithyphylla.</i>	" <i>alopecurum.</i>
" <i>poniformis.</i>	" <i>dendroides.</i>
<i>Bryum alpinum.</i>	" <i>loreum.</i>
" <i>carneum.</i>	" <i>molluscum.</i>
" <i>hornum.</i>	" <i>serpens.</i>
" <i>ligulatum.</i>	" <i>splendens.</i>
" <i>nutans.</i>	" <i>triquetrum.</i>
" <i>turbinatum.</i>	" <i>trichomanoides.</i>
<i>Conostomum boreale.</i>	" <i>uncinatum.</i>
<i>Dicranum bryoides.</i>	" <i>Silesianum.</i>
" <i>adiantoides.</i>	<i>Neckera crispa.</i>
" <i>taxifolium.</i>	<i>Polytrichum nanum.</i>
" <i>flexuosum.</i>	" <i>aloides.</i>
" <i>glaucum.</i>	" <i>urnigerum.</i>
" <i>heteromallum.</i>	<i>Spalchnum ampullaceum.</i>
" <i>pellucidum.</i>	<i>Trichostomum canescens.</i>
" <i>varium.</i>	" <i>lanuginosum.</i>
<i>Entosthodon Templetoni.</i>	" <i>heterostichum.</i>
<i>Funaria Muhlenbergii.</i>	" <i>aciculare.</i>
<i>Grimmia apocarpa.</i>	<i>Weissia acuta.</i>
" <i>maritima.</i>	" <i>curvirostra.</i>

<i>Jungermannia Hutchensiae.</i>	<i>Jungermannia cochleariformis.</i>
" <i>undulata.</i>	" <i>tomentella.</i>

## FERNS.

<i>Asplenium adiantum-nigrum.</i>	<i>Osmunda regalis.</i>
" <i>ruta-muraria.</i>	<i>Scolopendrium vulgare.</i>
" <i>trichomanes.</i>	<i>Ophioglossum vulgatum.</i>
" <i>marinum.</i>	<i>Lycopodium clavatum.</i>
" <i>viride.</i>	" <i>alpinum.</i>
<i>Blechnum boreale.</i>	" <i>selago.</i>
<i>Hymenophyllum Wilsoni.</i>	" <i>selaginoides.</i>

## LICHENS.

<i>Alectoria jubata.</i>	<i>Parmelia caperata.</i>
<i>Cetraria glauca.</i>	" <i>physodes.</i>
<i>Cladonia furcata.</i>	" <i>saxatilis.</i>
" <i>rangiferina.</i>	<i>Peltidea canina.</i>
<i>Lecanora tartarea.</i>	<i>Ramalina scopulorum.</i>

Ramalina fastigiata.  
 " fraxinea.  
 Scyphophorus cocciferus.  
 " pyxidatus.

Scyphophorus gracilis.  
 Squamaria murorum.  
 Stereocaulon paschale.  
 Sticta pulmonaria.

## ALGÆ.

Alaria esculenta.  
 Asperococcus fistulosus.  
 " pusillus.  
 " Turneri.  
 Bangia fusco-purpurea.  
 Batrachospermum moniliforme.  
 Bonnemaisonia asparagoides.  
 Bryopsis plumosa.  
 Seirospora Griffithsiana.  
 Calithamnion arbuscula.  
 " Brodiaei.  
 " byssoides.  
 " corymbosum.  
 " Hookeri.  
 " pedicellatum.  
 " interruptum.  
 " plumula.  
 " polyspermum.  
 " repens.  
 " roseum.  
 " tetragonum.  
 " Turneri.  
 " virgatulum.  
 Calothrix confervicola.  
 Catanella opuntia.  
 Ceramium ciliatum.  
 " diaphanum.  
 " nodosum.  
 " rubrum.  
 Chondrus Brodiaei.  
 " crispus.  
 " manniifolius.  
 " membranifolius.  
 Chorda filum.  
 " lomentaria.  
 Chordaria flagelliformis.  
 Chylocladia articulata.  
 " parvula.  
 " clavellosa.  
 " kaliformis.  
 Cladostephus spongiosus.  
 " verticillatus.  
 Codium tomentosum.  
 Conferva fucicola.  
 " glomerata.

Conferva lanosa.  
 " linum.  
 " melagonium.  
 " rupestris.  
 " tortuosa.  
 " ceramicola.  
 Dasya coccinea.  
 Delesseria alata.  
 " hypoglossum.  
 " sanguinea.  
 " sinuosa.  
 Desmarestia aculeata.  
 Dichloria viridis.  
 Dictyosiphon fœniculaceus.  
 Dictyota dichotoma.  
 Draparnaldia glomerata.  
 Dumontia filiformis.  
 Ectocarpus littoralis.  
 " siliculosus.  
 Enteromorpha clathrata.  
 " compressa.  
 Fucus ceranoides.  
 " canaliculatus.  
 " nodosus.  
 " vesiculosus.  
 " serratus.  
 Gelidium corneum.  
 Gigartina plicata.  
 " purpurescens.  
 Gloiosiphonia capillaris.  
 Gomphonema paradoxum.  
 Griffithsia corallina.  
 " setacea.  
 Halidrys siliquosa.  
 Helminthocladia vermicularis.  
 " virescens.  
 Himanthalia lorea.  
 Iridaea edulis.  
 Laminaria bulbosa.  
 " digitata.  
 " fascia.  
 " phyllitis.  
 " saccharina.  
 Laurencia obtusa.  
 " pinnatifida.

Lichina pygmæa.  
 Mesogloia Hudsoni.  
 Nitophyllum laceratum.  
 " punctatum.  
 Odonthalia dentata.  
 Oscillatoria nigra.  
 Phyllophora rubens.  
 Plocamium coccineum.  
 Polyides rotundus.  
 Polysiphonia atro-rubescens.  
 " Brodiaei.  
 " byssoides.  
 " elongata.  
 " elongella.  
 " fastigiata.  
 " fibrata.  
 " fibrillosa.  
 " frutriculosa.  
 " nigrescens.  
 " parasitica.  
 " pulvinata.  
 " thuyoides.  
 " urceolata.

Porphyra laciniata.  
 " vulgaris.  
 Ptilota plumosa.  
 Punctaria latifolia.  
 " plantaginea.  
 Rhodomela lycopodioides.  
 " subfusca.  
 Rhodomenia bifida.  
 " laciniata.  
 " palmata.  
 " palmetta.  
 " sobolifera.  
 Sphacellaria cirrhosa.  
 " olivacea.  
 " plumosa.  
 " scoparia.  
 Sphærococcus coronopifolius.  
 Stilophora Lynobyei.  
 Striatella arcuata.  
 Ulva lactuca.  
 " Linza.  
 " latissima.  
 Peyssonelia Dubyi.

#### MOLLUSCA FOUND IN LAMLASH BAY,

*When dredging along with James Smith, Esq. of Jordankill, in the summer of 1844.*

The list was made up by Mr. Bean, of Scarborough, to whom I sent a portion of the shelly sand dredged in the bay. A very few are added, found by myself on the shore.

Dentalium trachea, *Mont.*  
 " glabrum, *Mont.*  
 " imperforatum, *Mont.*  
 Vermiculum subrotundum,  
 " *Flem.*  
 " bicornis, *Flem.*  
 " intortum, *Flem.*  
 " concentricum.  
 " oblongum.  
 Renoidea oblonga, *Brown.*  
 Nautilus crispus, *Mont.*  
 " auricula.  
 Rotalia Beccaria.  
 " Beccaria, *var.*  
 Lobatula vulgaris, *Flem.*  
 " vulgaris, *var.*  
 Lagenula striata.  
 globosa.

Nummulina marginata.  
 Nodosaria linearis.  
 Arethusa lactea.  
 Vermilia triquetra, *Lam.*  
 Serpula vermicularis.  
 Pectinaria Belgica.  
 Spirorbis lucidus, *Flem.*  
 " corrugatus.  
 " heterostrophus, *Flem.*  
 Lottia Virginica.  
 " testudinalis.  
 Bulla truncata, *Mont.*  
 " pellucida, *Bean.*  
 " hyalina, *Turt.*  
 " mammillata.  
 Eulima polita.  
 Turritella unica.  
 " ambigua.



*Rissoa rufilabrum, Alder.*

" *costata.*

" *striata.*

" *Beauvii, Hanley.*

" *striatula.*

" *decussata.*

" *reticulata.*

" *costulata, Alder.*

" *labiosa.*

" *Harveyi, Thompson.*

" *semistriata.*

" *vittata.*

" *parva.*

" *vitrea.*

" *interrupta.*

" *fulgida.*

" *Balliæ, Thompson.*

" *minutissima, Bean.*

*Odostomia interstincta.*

" *unidentata.*

" *cylindrica, Alder.*

*Skenea depressa.*

" *divisa, Flem.*

*Natica Alderi.*

*Trochus umbilicatus.*

" *cinerarius.*

" *millegranus, Phil.*

" *subcarinatus.*

" *magus.*

*Nassa macula.*

*Cerithium reticulatum.*

" *adversum.*

*Parthenia turrita.*

*Fusus attenuatus.*

*Fusus purpureus.*

" *septangularis.*

" *retroversus, Flem.*

*Cemoria Flemingii.*

*Terebratula aurita.*

*Pecten opercularis.*

*Lima fragilis.*

" *tenera*

*Anomia Squamula, Mont.*

*Arca lactea.*

*Nucula Margaritacea.*

" *nitida.*

" *minuta.*

*Cardium exiguum.*

" *nodosum.*

" *fasciatum.*

" *medium, — only one valve.*

*Macra truncata.*

" *solida.*

" *elliptica.*

*Kellia suborbiculata.*

*Tellina donacina, Mont.*

*Lucina radula.*

*Lutraria compressa.*

*Lucina flexuosa.*

" *spinifera.*

*Cyprina minima.*

*Cytherea sinuata.*

*Hiatella minuta, Turton.*

*Montacuta bidentata, Turton.*

*Lacuna vineta.*

" *canalis, Turton.*

Addenda from Mr. Smith's log-book, dredged at Lam-lash and Lochranza:—

*Tellina depressa.*

*Venus cassina.*

*Pleurotoma elegans.*

*Fusus linearis.*

" *costatus.*

*Natica glaucina.*

*Solen pellucidus.*

*Cardium ciliare.*

" *serratum.*

*Solen antiquatus.*

*Montacuta ferruginea.*

*Crassina Garensis.*

" *compressa.*

*Crassina elliptica.*

*Myrtea spinifera.*

*Anatina pubescens.*

" *prætenus.*

*Lima tenera.*

*Pecten pusio.*

*Scalaria Turtoni.*

*Mya ovalis.*

*Amphidesma prismaticum.*

*Tellina punicea.*

*Venus Prideauxiana.*

" *rugosa.*

*Cardium crenatum.*

*Nucula tenuis.*  
*Pecten lævis.*  
*Bulla akera.*  
*Cerithium elegans.*  
*Cardium echinatum.*  
*Amphidesma Boysii.*  
*Macra solida.*  
*Balanus rugosus.*  
*Turritella terebra.*

*Serpula vermicularis.*  
*Rostellaria pes-pelecani.*  
*Lucina sinuosa.*  
*Cardium exiguum.*  
*Tellina donacina.*  
*Octopus vulgaris.*  
*Pleurotoma Boothii.*  
*Patella ancyloides.*

### MOLLUSCA FOUND IN ARRAN IN JUNE, 1846.

This list, with the exception of a few insertions, was obligingly made up by Mr. Joshua Alder, of Newcastle. Along with the numerous species found by him, it includes those found at the same time by Major Martin and myself.

*Eledone octopodia.*  
*Doris flammea.*  
     " *tuberculata.*  
     " *Johnstoni.*  
     " *plauata*, new species.  
     " *bilamellata.*  
*Triopa clavigera.*  
*Ægires punctilucens.*  
*Dendronotus arborescens.*  
*Eumenis flavida*, new species.  
*Doto fragilis.*  
     " *coronata.*  
*Eolis papillosa.*  
     " *coronata.*  
     " *Drummondi.*  
     " *olivacea.*  
     " *alba.*  
     " *amethystina.*  
     " *Glottensis*, new species.\*  
*Bulla lignaria.*  
     " *mammilata*, *Phil.*  
     " *truncata.*  
     " *acuminata*, *Phil.*  
     " *umbilicata.*  
     " *hyalina.*  
*Bullæa punctata.*  
     " *pectinata*, *Dilw.*  
     " *catenata.*  
*Actæon viridis.*  
*Eulima polita.*  
     " *distorta.*  
*Chemnitzia*, non-desc.

*Littorina vulgaris.*  
     " *rudis.*  
     " *neritoides.*  
*Lacuna pallidula.*  
     " *quadrifasciata.*  
*Rissoa Zetlandica.*  
     " *Beanii.*  
     " *rufilabrum.*  
     " *punctura.*  
     " *parva.*  
     " *striata.*  
     " *labiosa.*  
     " *interrupta.*  
     " *ulvæ.*  
*Odostomia pallida.*  
     " *plicata.*  
     " *interstincta.*  
*Skenea depressa.*  
*Trochus magus.*  
     " *umbilicatus.*  
     " *cinerarius.*  
     " *tumidus.*  
     " *Montacuti.*  
     " *millegranus*, *Martini.*  
     " *zeziphinus.*  
*Margarita communis.*  
*Scalaria Turtoni.*  
*Cerithium reticulatum.*  
     " *adversum.*  
*Nassa incrassata.*  
     " *reticulata.*  
*Purpura lapillus.*

\* I find that *Eolis Landsburgii* was not got in Arran, but at Saltcoats.  
D. L.

Buccinum undatum.	Modiola descrepans.
Fusus antiquus.	" vulgaris.
" corneus.	Cardium echinatum.
Pleurotoma Boothii.	" ciliare.
" linearis.	" nodosum.
" purpurea.	" edule.
Aporrhais pes-pelecani.	" lævigatum.
Cypræa Europæa.	Tellina fabula.
Tornatella fasciata.	" tenuis.
Coriocella perspicua.	" donacina.
Velutina lævigata.	" depressa.
Natica monilifera.	" solidula.
" Alderi.	Lucina radula.
" Montagui.	" flexuosa.
Capulus ungaricus.	Amphidesma album.
Emarginula fissura.	Cyprina vulgaris, <i>Sowerby</i> .
Lottia testudinalis.	" triangularis.
" virginea.	Mactra truncata.
Patella fulva.	" stultorum.
" pellucida.	Kellia suborbicularis.
" vulgata.	Corbula striata.
Chiton fascicularis.	Montacuta substriata.
" marginatus.	" bidentata.
" cinereus.	" ferruginosa.
" lævis.	" purpurea.
" lævigatus.	Artemis exoleta.
Dentalium entalis.	" lineta.
Brochus striatus, <i>Br.</i>	Venus fasciata.
" glaber.	" gallina.
" arcuatus, <i>Br.</i>	" ovata.
Pecten maximus.	" Prideauxiana.
" opercularis.	Pullastra vulgaris.
" obsoletus.	" virginea.
" Landsburgii.	Thracia declivis.
Lima tenera, <i>Turton</i> .	Anatina prætenuis.
" fragilis.	Mya truncata.
Nucula Margaritacea.	" arenaria.
" tenuis.	Lutraria elliptica.
" non-descr.	Solen siliqua.
Mytilus edulis.	" ensis.
Modiola discors.	Saxicava rugosa.

The following list was kindly made up by Mr. Bean of Scarborough, being the *Mollusca* and *Foramenifera* found by him in shelly sand dredged in Lamdash Bay, by Major Martin and myself, in July 1846. I have inserted some of the larger shells found by Major Martin and me, which Mr. Bean did not find in the sand. "To prevent confusion,"

Mr. Bean says, "I have adopted Hanley's names, unless when otherwise specified."

Dentalium entalis.	Venus fasciata.
" trachea.	Cardium exiguum.
" imperforatum.	" nodosum.
" glabrum.	" fasciatum.
Pectinaria Belgica.	" lævigatum.
Terebella chrysodon.	" edule.
Spirorbis conica.	" medium.
" nautiloides.	Arca lactea.
" lucida.	Nucula nucleus.
" corrugata.	" nitida.
" heterostrophæ.	" minuta.
Serpula Mulleri.	Modiola modiolus.
" vermicularis.	" discrepans.
Vermilia triquetra.	" discors.
" scabra.	Lima inflata, <i>Forbes.</i>
Balanus communis.	" subauriculata, <i>Turton.</i>
" Scoticus.	" tenera, <i>Turton.</i>
Creusia verruca.	" fragilis, <i>Fleming.</i>
Mya arenaria.	Pectunculus pilosus.
Macra truncata.	Pecten opercularis.
" subtruncata.	" maximus.
" cinerea.	" varius.
" solida.	" obsoletus.
" elliptica.	" Landsburgii, <i>Sm.</i>
" stultorum.	Ostrea edulis.
Kellia suborbicularis.	" parasitica.
Montacuta bidentata.	Anomia squamula.
Amphidesma Boysii.	" cylindrica.
Sphænia Binghami.	Terebratula aurita.
Hiatella arctica.	Chiton cinereus.
Saxicava rugosa.	" marginatus.
Tellina donacina.	" ruber.
" fabula.	Patella virginea.
" tenuis.	" testudinalis.
Lucina radula.	Emarginula fissura.
" spinifera.	Fissurella Noachina.
" sinuosa.	Pileopsis ungarica.
Crassina Scotica.	Bullæ catenulifera.
Cyprina vulgaris.	" punctata.
" minima.	Bulla lignaria.
Cytherea lincta.	" umbilicata.
" exoleta.	" obtusa.
Pullastra vulgaris.	" mammillata, <i>Phil.</i>
" virginea.	" cylindræa.
Venus ovata.	" hyalina.
" gallina.	Natica monilifera.
" verrucosa.	" Alderi.

Skenea depressa.	Rissoa reticulata.
" divisa.	" interrupta.
Margarita vulgaris.	" fulgida.
Scalaria clathrus.	" minutissima, <i>Bean.</i>
Trochus umbilicatus.	" Bulliæ ?
" tumidus.	" Harveyi.
" magus.	" inconspicua, <i>Alder.</i>
" cinerarius.	" Trichotropis borealis,
" millegranus.	" <i>Sowerby.</i>
" Montacuti.	Helix nitidissima, <i>Linn. Trans.</i>
Littorina littorea.	" bicolor, <i>Linn. Trans.</i>
" rudis.	Turritella terebra.
" neritoides.	" unica.
" petræa.	" nitidissima.
Lacuna vineta.	" ambigua, <i>Bean.</i>
" canalis.	Eulima polita.
Odostomia unidentata.	" distorta.
" pallida.	" subulata.
" plicata.	Parthenia turrita.
" cylindrica, <i>Alder.</i>	" clathrata, <i>Jeffrey.</i>
" interstincta.	Cerithium reticulatum.
" spiralis.	" tuberculatum.
" costata, <i>Bean.</i>	" adversum.
" ornata, <i>Bean.</i>	Fusus attenuatus.
Rissoa cinex.	" nebula.
" striatula.	" purpureus.
" costata.	" retroversus.
" parva.	" antiquus.
" alba.	" corneus.
" scalariformis.	" rufus.
" striata.	Pleurotoma septangularis.
" calathisca.	" linearis.
" labiosa.	" Boothii.
" rufilabrum, <i>Alder.</i>	" coarctata.
" costulata, <i>Alder.</i>	" Smithii.
" Beanii.	" turricula.
" decussata.	Purpura lapillus.
" vittata.	Buccinum undatum.
" semistriata.	" macula.
" vitrea.	Nassa reticulata.
" cingilla.	

## FORAMENIFERA.

Vermiculum marginatum,	Vermiculum concentricum,
" <i>Mont.</i>	" <i>Brown.</i>
" incurvatum, <i>Mont.</i>	" oblongum, <i>Flem.</i>
" subrotundum,	Nummulina marginata, <i>Macg.</i>
" <i>Flem.</i>	Nautilus subarcuatulus, <i>Mont.</i>
" bicornis, <i>Flem.</i>	" crispus, <i>Mont.</i>
" intortum, <i>Flem.</i>	" auricula, <i>Wood.</i>

<i>Nautilus umbilicatus</i> , <i>Mont.</i>	<i>Renoidea oblonga</i> , <i>Brown.</i>
<i>Rotalia Beccaria</i> , <i>Flem.</i>	<i>Orthocera linearis</i> , <i>Flem.</i>
" <i>reversa</i> <i>var.</i> , <i>Flem.</i>	" <i>legumen</i> , <i>Flem.</i>
<i>Lobatula vulgaris</i> , <i>Flem.</i>	<i>Lagenula squamosa</i> , <i>Flem.</i>
" <i>reversa</i> , <i>var.</i>	" <i>striata</i> , <i>Flem.</i>
<i>Textularia oblonga</i> , <i>Macgill.</i>	" <i>lineata</i> , <i>Bean.</i>
<i>Arethusa lactea</i> , <i>Flem.</i>	" <i>globosa</i> , <i>Flem.</i>

The following list of land and fresh-water Molluscs might be increased tenfold by a little research:—

<i>Helix trochilus.</i>	<i>Balea fragilis.</i>
" <i>rufescens.</i>	<i>Clausilia nigricans.</i>
" <i>caperata.</i>	<i>Limnea palustris.</i>
" <i>rotundata.</i>	" <i>limosa.</i>
" <i>aspersa.</i>	<i>Physa fontinalis.</i>
" <i>arbusorum.</i>	<i>Planorbis spirorbis.</i>
" <i>nemoralis.</i>	" <i>contortus.</i>
" <i>hortensis.</i>	" <i>albus.</i>
" <i>fusca.</i>	<i>Ancylus fluviatilis.</i>
<i>Bulimus lubricus.</i>	<i>Cyclas cornea.</i>
<i>Succinea putris.</i>	<i>Pisidium obtusule.</i>
<i>Vitрина pellucida.</i>	<i>Pupa sexdentata.</i>
<i>Pupa muscorum.</i>	<i>Planorbis imbricatus.</i>
<i>Carychium minimum.</i>	

Trouts abound in the lochs and rivers. In the hope that their size might be increased by better feeding, minnows have been brought from Ayrshire and put into several of the lakes and rivers in Arran. When the rivers are swollen in summer, salmon and salmon-trouts ascend, and add much to the pleasure of the angler, especially in Locherza. Wholesale destruction is at times carried on by nets. The sea-coast abounds with fish, such as haddocks, whittings, seth, lithe, ling, cod, eels, skate, flounders, soles, turbot, mackerel, salmon, and, above all, herrings at certain seasons. A few of the rarer fish may be mentioned:—

<i>Spinax Acanthias.</i>	<i>Callyonymus Lyra.</i>
<i>Squalus maximus.</i>	" <i>dracunculus.</i>
<i>Scyllium catulus.</i>	<i>Crenolabrus tinca.</i>
<i>Syngnathus ophidion.</i>	<i>Trigla cuculus.</i>
" <i>acus.</i>	<i>Cottus scorpius.</i>
<i>Lepidogaster bimaculatus.</i>	<i>Spinachia vulgaris.</i>

## LIST OF STAR FISHES.

Comatula rosacea.	Solaster endeca.*
Ophiura texturata.	Cribella rosea.
" albida.	" oculata.
Ophiocoma Ballii.	Asterina gibbosa.
" granulata.	Asterias aurantiaca.
" bellis.	Goniaster Templetoni.
" rosula.	" glacialis.
" minuta.	Luidia fragilissima.
Uraster glacialis.	Palmipes membranaceus.†
" rubens.	

## LIST OF SEA-URCHINS.

Echinus sphæra.	Amphidotus cordatus.
" miliaris.	" roseus.
" lividus var. ?	Echinocyamus pusillus.
Spatangus purpureus.	

## LIST OF CRABS.

Inachus Dorsettensis.	Porcellana longicornis.
Cancer pagurus.	Lithodes maia.
Hyas araneus.	Nephrops Norvegicus.
Pagurus Bernhardus.‡	Galathea squamifera.
Carcinus mænas.	Gonoplax angulata.§
Portunus puber.	Portunus depurator.
Ebalia Pennantii.	Pinnotheres pisum.
Corystes Cassideanus.	Crangon vulgaris.
Porcellana platycheles.	Palæmon squilla.

## LIST OF ZOOPHYTES.

Tubulipora patina.	Lepralia pediostoma.
" serpens.	" pertusa.
" hispida.	" Landsborovii, Johnston
Cellepora pumicosa.	(one specimen at
" cervicornis.	Lochranza.)
Lepralia coccinea.	" annulata.
" hyalina.	Hippothoa catenularia.
" immersa.	Flustra membranacea.
" ciliata.	" linearis.
" insignis.	

\* Solaster endeca seems rare in the west, as only one specimen has been got.

† Palmipes membranaceus is rare also, as only one specimen was got by Major Martin and another by me.

‡ We found several species of the Hermit-crab but I dare not attempt to name them.

§ Often got on the Ayrshire coast.

Flustra tuberculata.	Sertularia operculata.
Membranipora pilosa.	" pumila.
Cellularia reptans.	Thuiaria thuia.
Crisia eburnea.	Plumularia falcata.
" luxata.	" setacea.
" cornuta.	" Catharina.
" chelata.	" Pinnata.
Sertularia rugosa.	" myriophyllum,
" polyzonias.	" with ovaries.
" filicina.	Laomedea geniculata.

Could I name all the *Annelides* I have seen in dredging, they would form a long list; but in this department (which has not been studied by many) I have not even got the length of knowing what is rare. Lest I should trouble my friends with what is common, I allowed all this tribe to escape. One fine striped fellow, more than a foot in length, which I got in Lamash Bay, I described to my most obliging friend, Dr. Johnston, the most skilled annelidologist, I suppose, in Britain; and he at once knew it to be *Meckelia trilineata*; but as I soon get out of my depth in this direction, I shall proceed no farther.

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*P. S.*—Alas! alas! what is our life? “Even a vapour that appeareth for a little, and then vanisheth away.” Just when I had finished correcting the proof of this last page I received tidings of the death of two of those who gave such a charm to one of the little excursions I have attempted to describe—of the Rev. Dr. Thomas Brown, of Free St. John’s, Glasgow, one of the oldest of my friends, and one of the best and most beloved of men; and of Mr. Claud Marshall Buchanan, Glasgow, a most amiable, talented, pious, and affectionate young man, and very dear to all who knew him. “Blessed are the dead which die in the Lord,



from henceforth : yea, saith the Spirit, that they may rest from their labours, and their works do follow them.”  
“Mark the perfect man, and behold the upright ; for the end of that man is peace.”

D. L.

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### ADDENDUM.

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Extract of a LETTER from JOSHUA ALDER, Esq., Newcastle, dated April 14, 1847, in reference to what is said in page 304 respecting a *Lucernaria* in a young state.

“I got this morning the first part of Sars’s *Fauna littoralis Norvegiæ*, and in it I find figured and described the *Lucernaria* that Mr David got in Arran, and which puzzled us so much at the time. Sars names it *Lucernaria cyathiformis*.” This is new to Britain.

## CORRIGENDA.

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Page 117, line 19, for gawkie,	read gawcie.
" 117, " 29, " sprung,	" sprang.
" 118, " 2, " sprung,	" sprang.
" 123, " 2, " <i>Saxifragu</i> ,	" <i>Saxifraga</i> .
" 132, " 24, " lie,	" lies.
" 133, " 32, " a new horse,	" anew, horse.
" 148, " 11, " without,	" beyond.
" 149, " 12, " light,	" tight.
" 175, " 11, " <i>læviyatum</i> ,	" <i>lævigatum</i> .
" 206, " 29, " <i>Trachus</i> ,	" <i>Trochus</i> .
" 312, " 6, " <i>Batracho spermum</i> ,	" <i>Batrachospermum</i> .
" 312, " 11, " Bay,	" Beg.
" 319, " 4, " <i>Pecten striatus fuci</i> ,	" <i>Pecten fuci</i> .
" 330, " 16, " <i>parvulu</i> ,	" <i>parvula</i> .

# AILSA-CRAIG.

## PART III.

Hearken, thou craggy ocean-pyramid!  
Give answer from thy voice—the seafowl's screams!  
When were thy shoulders mantled in huge streams?  
When from the sun was thy broad forehead hid?  
How long is't since the mighty power bid  
Thee heave from airy sleep, from fathom dreams?  
Sleep in the lap of thunder, or sun-beams,  
Or when grey clouds are thy cold coverlid?  
Thou answerest not, for thou art dead asleep!  
Thy life is but two dead eternities,—  
The last in air—the former in the deep;  
First with the whales—last in the eagle-skies.  
Drowned wert thou till an earthquake made thee steep;  
Another cannot wake thy giant size.

KEATS.

As many of those who spend a month or more in Arran, in summer, are persons who seek refreshing recreation after being engaged during the rest of the year in the exciting and exhausting bustle of business in town, they are open to the enjoyment of a pleasure trip. Arran itself affords very ample scope for little excursions, so that there is not the same temptation

to wander from it for the sake of variety, as in many places of more limited bounds. Some forty years ago, it would have required no little courage to undertake a pleasure trip to Ailsa, which is about twenty miles from the south end of Arran. It might have been reached in a short time with a fair wind; but who could tell but an adverse wind might have kept the voyagers on the Craig for several days, and ere they got away, they might, in their musings on the rocky shore, begin to think that they were more nearly allied to the solan geese, lodged in the cliffs, than they had before suspected. Now, however, owing to the facilities afforded by good steamers, the trip to and fro may be accomplished in a few hours.

When Dr Macculloch wrote his "Description of the Western Islands," between thirty and forty years ago, Ailsa was little known, except as an interesting object from a distance. Macculloch, on visiting it, seems to have been greatly struck with it, and writes respecting it with somewhat of the enthusiasm of those who first discovered the wonders of Staffa. "Of the various objects," says he, "which cause the scenery of the Clyde to rank among the most enticing tracts in Scotland, Ailsa stands foremost. Yet it has not hitherto excited that attention to which it is entitled, having been little visited, even by those to whom its vicinity renders it so easily accessible. To those whose pursuit is picturesque beauty alone, it has almost remained unknown. He who may hereafter profit by this hint, will not regret the time he

may appropriate to this voyage. He will be amply repaid by the sight of scenery not surpassed, and rarely equalled, among the remoter Scottish isles."

"In the distant horizon, it forms an object peculiarly striking, from its unexpected magnitude in the blue haze, and from the decided and sudden manner in which it rises from the sea. In this respect it presents a solitary feature in Scotland, rather reminding the spectator of the volcanic islands of the Pacific Ocean. The effect is often much increased by the position of the clouds which so frequently involve its summit, adding indefinite and ideal dimensions to its altitude. When viewed near at hand, Ailsa produces that peculiar effect which is the result of greatness of dimension, combined with simplicity in the leading form, and variety in the arrangement of the parts. In this respect its chief advantage is owing to the steepness of the acclivity, which enables the eye to comprehend the whole of its bulk, even from a very short distance, thus giving it a mountainous effect, often lost in the vicinity of much larger masses, in consequence of the foreshortening resulting from the lowness of their angles. While by its magnitude it thus fills the eye, the commodious distance at which it may be examined, enables the sight to comprehend the variety and distribution of its parts, and to distinguish that delicacy of local colouring for which a certain degree of proximity is always required. It is partly owing to the beauty of the local colour, the mild tones of grey interspersed with greens of every tint, that the columnar ranges of Ailsa produce an

effect so far superior to those of Staffa, of the Shiant Islands, or of Skye,—the uniform dark hue of these, without variety or contrast, often confounding the whole in indiscriminate gloom.”

Ailsa is situated in the Frith of Clyde, about ten miles distant from the nearest part of the coast of Ayrshire, and about twice as far from the Island of Arran in the county of Bute, and from Kintyre in the county of Argyle. It rises abruptly from the sea in a conical form to the height of about 1100 feet. As from the perpendicular nature of the acclivity, it cannot be circumambulated, it is not so easy accurately to tell its length and breadth; but Dr Macculloch estimated its length at 3300 feet, and its breadth at 2200 feet. In many places the water is so deep at a small distance from the shore, that vessels may approach it with safety, though in other places there are sunken rocks on which they might run aground. There is one point, however, on the east side, where the meeting of contending tides has brought together a great quantity of rolled pebbles, forming a convenient landing-place for boats and larger vessels. At every other place the rocks are so perpendicular, or so rugged, that there can be no landing with safety. “The shores, if shores they may be called, that are found at the foot of the rocks, are formed of the stones and rubbish that fall from the summit, and are, with the exception of the landing-place above mentioned, so narrow, that though it is possible to land on them in fine weather, they afford no view of the magnificent scenery which towers above. For

this purpose it is necessary to make the circuit in a boat, the summit of the island being not only difficult to traverse, but presenting, even when the laborious task has been executed, no sight of the perpendicular faces which constitute its most striking features."

The perpendicular rock where it commences is only about forty feet in height, and slightly columnar. As it increases in height, the pillars are more distinctly marked, and at last it presents a perpendicular range of columns of about 400 feet in height—an elevation before which the columns of Staffa,—sixty or seventy feet in height,—sink into comparative insignificance. In regularity of form, however, they are inferior to the columns at Staffa. At the Giant's Causeway also, which I lately visited, the columns, though generally less than two feet in diameter, instead of six feet as at Ailsa, are much more distinct, can be easily separated from each other, and divided at the joints. For each joint those who act as guides at the Causeway charge two guineas. Ailsa and what is properly the Giant's Causeway do not admit of being compared, for they are quite different in character,—Ailsa towering in columnar grandeur hundreds of feet above you, and the Causeway lying in tessellated beauty under your feet, as you walk on the smooth and level tops of the pillars till they gradually slope down into the sea. A person is filled with astonishment, in walking on this wonderful pavement, at seeing how beautifully the columns on which he is treading are compacted together—no empty space

being left—all piecing as well as if each one had been chiselled out for its place; and yet, amidst this great regularity, there is great difference of form,—some being pentangular, others hexagonal, and others again forming fine octagons. What a wonderful Causeway! we exclaim. “Who made it?” said a foreigner, after he had looked at it with admiration. “Who made it?” said he, in his broken English. “God made it,” said the Irish gossoon who was acting as his guide. God made it, indeed, and nothing but the hand of God could have produced such wonderful work. Still more evident is it, however, that God made the magnificent columnar work at Ailsa, and dreadful would be the convulsion when it was upheaved from the bottom of the sea, to remain for ages a monument of His almighty power. The broken summits of these columns, 400 feet above the sea, form the safest possible resting-places for the various kinds of seafowl that there, in their season, build their nests. Gannets or solan geese particularly abound, “forming,” says Macculloch, “with the various tribes of gulls, puffins, awks, and other seafowl, a feathered population scarcely exceeded by St Kilda or the Flannan Isles. As the alarm occasioned by the arrival of a boat spreads itself, the whole of the noisy multitude takes wing, forming a cloud in the atmosphere which bears a striking resemblance to a fall of snow, or to the scattering of autumnal leaves in a storm. To prevent interference in their courses, each cloud of birds occupies a distinct stratum in the air, circulating in one direction, and in a perpetual wheeling flight.”



When I visited Ailsa some twenty years ago, steamboat-excursions were not so common as they now are, and a trip to Ailsa was worth speaking of. We sailed from Ardrossan at eight o'clock, A.M., with a goodly number on board; called at Brodick and Lamash, taking in additional passengers, and then started for Ailsa, which we reached after a pleasant passage on a delightful day. We landed at the spot of ground mentioned by Macculloch, and were told that an hour would be allowed us, during which we might amuse ourselves on the shore, or ascend to the summit of the conical crag. About fifteen of the party set out to scale the hill. I went up along with them as far as the old castle on the east side of the hill, where there is a kind of rough stair opposite to the landing-place. It is no easy matter to make one's way even so far, for the path is rather rough and deceitful. It is greatly cumbered with ponderous stones, that have rolled down from the higher parts of the hill. Were they bare, a person might contrive to thread his way among them, or to clamber over them; but placing his foot on what seems loose herbage, he finds that it gives way under him, and he sinks down to the middle betwixt two large stones, and finds it no easy matter to make his way through the rank vegetation which conceals the rugged inequality of his steep path. Every naturalist who has visited Ailsa has been struck with the luxuriance of the vegetation, of which, like ourselves, we doubt not, they felt the practical effects. *Silene inflata* and *Lychnis dioica* were as luxuriant as if they had been growing in the

garden of the Hesperides. The nettle, which dogs the foot of man, was flourishing in gigantic size and vigour, when the human beings whose habitation it marked were slumbering in the dust. The grass also seemed to bid defiance to the nibbling power of the numerous rabbits that burrowed there, and to the stronger teeth of a few goats that we were told might still be seen as the remnant of a larger flock. Those that have ascended farther up, tell us that there are two springs of water producing marshes, in which *Helosciadium inundatum* abounds, as enormous in size as the other plants found in the island. To what are we to ascribe this prodigious luxuriance? Chiefly to two causes. As no part of the island is far removed from the waves, all the plants that grow on it are kept almost constantly moist by the spray, which, though often invisible in its ascent, descends with a fertilizing influence on the soil, and on all the herbaceous plants that spring from it. To shrubs and trees this would be unfavourable, especially when they rise so high as to feel the influence of the sea-blast. To evergreen shrubs, and to the pine tribe in general, I know from experience that the spray and sea-breeze are particularly injurious. But herbaceous plants, that die down in winter, seem to thrive under the marine aspersions, which come in a milder form during summer. But there is another and a still more powerful cause of this great luxuriance, namely, the guano produced by the sea-fowls that in numbers numberless congregate in the island. True it is, that much of it must be swept into the sea, from their

breeding-places being on the tops of the columns. But they rest at times in immense flocks on various parts of the island, and many of them, we doubt not, find their graves there. We do not often see a dead bird, even in hard winters, when so many of them perish ; but it is because, when they feel the approach of the all-subduing enemy, they instinctively seek a grave for themselves, creeping into some crevice, or burying themselves in some thicket, where death comes upon them, and where they gradually moulder into dust, which every year becomes richer and richer also by the decay of that luxuriant herbage with which in summer it is covered.

Having forced my way through the vegetable entanglements and over the obstructing stones, and reached the castle at the height of about 250 feet, and having no intention of ascending to the summit, we thought this a good place to come to a halt. It did not command the same extensive view as the top of the hill, but nevertheless it was very good. I remember being surprised to find that I had got so near to Ireland. We had a fine view of Lochryan on the Galloway coast, but we were much pleased to find that we had almost as distinct a view of Belfast Loch as of the Scottish one. Having enjoyed the distant prospect, I turned my eyes to what was at hand, and especially to the ancient square tower of strength by which I stood, of which only the walls and some vaulted chambers now remain. Having examined the ruins, and considered how impregnable it would long be thought by those who inha-

bited it, as bows and javelins, the missile weapons of those days, would have had no effect on its massive walls, I remembered that these, high and thick as they were, had proved altogether insufficient for the defence of the inhabitants, as there was one enemy who was himself a host, who had not only looked in at their narrow windows and narrower arrow-slits, but had forced their barred gates and invaded their apartments, and had carried them all off, not in a body, but at his pleasure one by one, to consign them to a darksome prison-house, from which there was no possibility of escape. That enemy was Death, and that prison-house was the grave; and neither the governor of the castle, nor one of the proud defenders of the stronghold, nor even the meanest menial within the walls, has been allowed to escape to tell the various ways by which all the rest in their successive generations were forced to yield to the king of terrors.

I was led also to remember that what was a tower of strength against human power to its ancient occupants, would have afforded little protection to them now, when more formidable weapons of offence are in use than arrows, however well barbed, or well aimed, or well guided by the feathers of the grey-goose wing; as a few broadsides from a man-of-war in the offing would have caused the proudest battlements of the fortress to crumble to the dust.

After some such musings, I descended leisurely without observing any rare plants. I would have been well pleased to fall in with *Lavatera arborea*, which I understand has been found in Ailsa, as it has

also in a corresponding habitat, the Bass Rock on the East coast. I regretted less my not finding it, as I have found it in a wild state at Arneill on the coast of Ayrshire. It thrives remarkably well at Ardrosan, where I have seen it eight feet in height, with a stem almost as thick as a man's arm, well-deserving the name of *Tree Mallow*. On reaching the beach, I sauntered along the shore in hopes of finding some shell worth taking home as a memorial of my visit to Ailsa; but in this I was disappointed, for those that are driven ashore are dashed with such violence on the rocks, that nothing but fragments can be picked up. Seeing that the given hour was nearly expired, I was returning from my solitary ramble on the shore, when the sound of the steamer's warning-bell made me quicken my pace. When I reached the steamer, many crowded round me, and said, "It was well that you were not here, for we have got a terrible fright with your sons." These dear boys, of ten and twelve years of age (who have now been many years in Australia), had accompanied me in the excursion, and were of course among those who started for the pinnacle of the Craig, and were two of the five who succeeded in reaching it. They had been particularly gratified by having so good a view of the North of Ireland, and had been amused by finding that the puffins, or Ailsa cocks as they are called in the West, had built their nests in the rabbit-holes, and that the young birds were very fierce, hissing and biting with their little sharp bills when they attempted to handle them. When, however, they began to

descend, they found that their companions had got greatly ahead of them, and saw that the steamer was preparing to sail. In a little, they heard the bell which was intended to assemble the stragglers, and they began to quicken their pace, and seeing the party hurrying aboard, some rising fears of being left in an uninhabited island put more mettle into their heels, and the nimble step was quickened into a race. They were observed by the party aboard, who saw, what they did not see, that they were advancing to the brink of a tremendous precipice, from which, if they should be dashed, ruin would be inevitable, and a loud simultaneous shout was raised by all aboard to warn them of their danger. The shout was heard by them, but as they imagined that this was intended to warn them that they might soon be too late for the boat, they pushed on with increased velocity, till they were on the very brink of the cliff. All on board thought that they were hastening to destruction, and the ladies covered their eyes that they might not see the fatal plunge ; but the light-hearted, nimble-footed boys, a moment ere it was too late, observing the precipice when they were on its very brink, were able in some degree to check their speed, and to skim along the ledge of the rock till they reached a place where they could descend with safety, and they had reached the vessel before I arrived at it. Many, as I said, crowded around me, congratulating me on the escape of my sons, and also on being so distant at the time as to escape the fright.

Though I was thankful to a kind Providence for

preserving them, it was not till some years afterwards that I was fully aware of the greatness of the danger. Passing at that time from Ayr to Ballantrae in a steamer, we came very near Ailsa; and when we were alongside of the mighty rock, I thought of those who were then far away, and mentioned to a stranger, with whom I had been conversing, the dangerous circumstances in which my sons had on that occasion been placed. He seemed more affected by what I told him than I expected, and I saw that he had good reason to be so, when he told me that a year or two after the period to which I have alluded, he had been on Ailsa as one of a happy marriage-party from Stranraer; that having landed, they had ascended to the summit, and after spending some time there, they began to descend in great glee, all of them, both male and female, being in the heyday of youth and health. As there had been a tight race for the honour of being first up, they began again to strive who should be first down, and a young man, who had got the start of the rest, running unexpectedly on this very precipice, being unable to check his speed, in spite of every effort rushed over, and was afterwards found by his companions dead, and greatly mangled by the dreadful fall. This cast a deep cloud over the whole party, and they who in the morning left Stranraer full of joy, returned in the evening laden with sorrow, bearing the dead body of their companion, and bringing the mournful tidings to the afflicted friends of the deceased.

How true is it that in the midst of life we are in

death, and that in the most joyous circumstances there may be but a step between us and death ! And what a lesson does this teach us of the importance of living in a state of preparation for eternity,—of joining trembling with our mirth, fearing the Lord and his goodness, cultivating such a reverential sense of his presence as will restrain us, even in our most joyous moments, from doing any thing to offend Him whose favour is life, and whose loving-kindness is better than life !

But we must now return to our own expedition. The day hitherto had been very favourable. Before we left the island, the steamer was brought close to that part of the Craig where there is the range of colossal columns rising from the sea, as we have said, to the height of about 400 feet. The spectacle was by far the grandest of the kind I had ever seen. On ledges at different heights, where part of the column had been broken off, there were multitudes of sea-fowl ; and when a musket was fired, immediately the air was filled with the winged inhabitants, and our ears assailed by the noise they raised, as if reproaching us for our unpolite conduct. I was very much annoyed by the wanton cruelty of one of our party, and I am sorry to say that he was a preacher. He had a musket, and his delight was to shoot the poor birds in their flight. There was no trial of skill, for the difficulty would have been to miss in such a flock ; and then when he did kill, he had only the cruel satisfaction of seeing that he had taken away life, for the poor bird falling into the sea could not



be reached by him, and might be sadly missed by the young brood left behind. I wish the noble proprietor, the Marquis of Ailsa, would use some means of preventing such culpable conduct. It would be an honour to be an informer in such cases.

So far as we had gone, all had been prosperous; but when the vessel was brought near to the cliff before sailing, that we might have a good view of the loftiest range of the magnificent columns, ere we were aware, she ran on a ledge of sunken rock, and became so completely grounded, that all the power of steam could not remove her from this perilous predicament. The captain was soon at his wits' end. He had proposed that we should form a close phalanx on the deck, and run from bow to stern, in order, if possible, to move her, but we had repeatedly done this, and all was in vain. The afternoon had as yet been good, but there were by this time some appearances of an unfavourable change, and in these circumstances our condition was far from being enviable. One surly blast might have rendered us a wreck, and I know not if there was even a boat aboard, so that if we had been cast into the sea, there the greater part of us must have remained, for the very thought of scaling the precipitous rock, though it was so close to us, was altogether out of the question. Some strong swimmers might have succeeded in reaching the landing-place, where the shore was accessible, but many men, women, and children must soon have found a watery grave. There was one thing greatly in our favour, and in that, under God, our hope lay. The

tide was making ; and we fondly hoped that ere long the rising tide would raise the vessel from the sunken rock. The tide seemed in these circumstances to flow moré slowly than usual, but with all the patience we could muster, we had to abide the result. Many a countenance had increased greatly in length, and many a tongue that lately had been very glibe and nimble had become quite silent. No jokes were passed. Our cruel sportsman no longer plied his gun, though the birds were hovering over our heads, uttering loud cries, most of them, we doubt not, in wrath, though some notes were more in the tone of pity. At all events, we were beginning to think ourselves objects of pity. More than once the power of the steam had been tried, but the vessel stuck fast, as if she had become a part of the rock on which she rested. Many a time was the question put to the captain, especially by the ladies of the party, "Are you sure the tide is rising?" And, "Do you think that it will really float us?" The captain had his own fears, I believe, but he put the best face he could on it. When he thought that it was about highwater, he proposed that we should make another effort. We were all directed to crowd together on a particular part of the deck, and all the steam the boiler could yield was put in requisition, and, thank God, it was successful. She glided silently off the rock ; we found that we were afloat, and, while a loud shout of joy was raised by all, I trust there were many silent aspirations of gratitude to Him who had granted deliverance.

Pleasure-sails do not always terminate pleasantly.

Very soon after we left Ailsa, the afternoon became very wet and windy, and the wind besides was ahead, so that, with a bad sea-boat, and cold, wet, squally weather, our progress was very slow, and our condition very uncomfortable. Not a few had come aboard at Brodick and Lamlash in the expectation of making the trip in a few hours, and of being landed at Brodick or Lamlash before sundown; but ere we reached either Lamlash or Brodick, it had become quite dark, and so stormy that the captain could not venture to land his passengers in Arran, so that they had to be carried on to Ardrossan. We reached Ardrossan at a late hour, and, after a walk of three miles, we arrived at the Manse of Stevenston in safety, well pleased that we had been on Ailsa, but hoping, if we ever visited it again, that the trip might end more agreeably.

Though we have left Ailsa, we have a good deal yet to say respecting it. It is in the West spoken of by way of eminence as *the* Craig; but what kind of craig or rock is it? We answer this by quoting Macculloch:—"Ailsa is composed of a single rock, no difference being perceived between the amorphous and the columnar parts. The whole mass must be considered as one of the numerous modifications of the agents of the trap family. It consists of an almost uniform basis of greyish compact felspar, occasionally tinged with a brownish or reddish hue, having small grains of quartz interspersed throughout. Together with that it contains black spots, formed of very minute particles of hornblende, collected in

small groups, and condensed towards a central point. It adds another variety to the list of those rocks, which, like basalt, are capable of assuming a columnar form. Numerous trap veins traverse this rock. They are of considerable dimensions, and, from the abrupt forms of the cliffs, expose their courses for a great space, presenting this geological fact in a very interesting point of view. The greater number are vertical, or at least highly erect, and they are attended with no disturbance or derangement of the surrounding rocks beyond that of simple separation; nor is there any alteration of either rock visible at the places of contact."

And is it uninhabited? It is now uninhabited by man. Not long ago an attempt was made to make it a fishing-station, and houses were built, and fishermen located in them for a time; but whether they found it too dreary or too stormy, we know not; at all events, we saw the cottages deserted. Were we to attempt to describe the fish of the sea around it—the living creatures that might be found on it—and the fowls of the air that are seen flying in such flocks above it—we might prepare to write many volumes. We shall limit ourselves to short notices of a few of the birds that are known to frequent this conical island, making free use, by the kind permission of the author, of the rich store of information in the "Natural History of Ireland, by William Thompson, Esq." I shall begin with the puffin (*Fratercula arctica*, Linn.), which breeds abundantly in Ailsa, and in the west of Scotland goes under the name of

the Ailsa Cock. This bird rejoices in many names, such as Coulter-neb, Sea-Parrot, and in the north of Scotland it is called Tammie Norrie. Two of the names, Coulter-neb and Sea-Parrot, are evidently from the peculiar shape of the bill. They are migratory, arriving in March and departing in August. They are represented by some as forming their nests in rabbits' burrows, from which, no doubt, they can easily dislodge the timid and "feeble folks" who were the rightful proprietors. But though they may at times do this, it has been ascertained that they are in the habit of forming burrows for themselves. On the island of Rathlin, off the Giant's Causeway, where puffins breed in great numbers, it is stated, on good authority, that their burrows must be of their own making, as many of them are in places that rabbits could not reach. They burrow in the mould among the rocks to the depth of two or three feet, and at the end of the excavation the egg, which is white, and about the size of a hen's, is deposited on the bare earth. Dr Macculloch, in his description of the Flannan Isles, remarks, "Various sea-fowl have here established their colonies, but the most numerous is the puffin. These literally cover the ground; so that when, on the arrival of a boat, they all come out of their holes, the green surface of the island appears like a meadow richly enamelled with daisies. The soil is so perforated with their burrows, that it is scarcely possible to take a step on solid ground!"

Mr Thompson, after an eloquent description of Horn, in Donegal, says—"Immense numbers of

puffins breed here, and they afford me an excellent and near opportunity of observing them, as, within a yard of the summit, many appear on the flat ledges of rock, while others come flying up from the sea, alighting beside them, quite regardless of my presence. A few yards down, others are seen at the entrance of holes, like rabbit-burrows, though really their own perforations. An immense bank of loose sandy earth, shooting down almost perpendicularly towards the sea, was drilled by them so as to resemble a gigantic dove-cot." They are excellent foragers for their young, having the bountiful sea always at hand richly stored with provision. "A puffin shot here yesterday," says Mr Thompson, "was bearing to its mate or young six fish, five of which were young *Clupeæ*, nearly six inches in length, and the other a sand-eel of large size. Several more were remarked to be similarly well-laden; and one bird had hold of a fish nearly the size of a full-grown herring." Little wonder is it that the little puffins thrive, and become very plump, when constantly enjoying such abundant cheer. It is a prevalent opinion in Rathlin, in Ireland, and in the island of Eigg, in Scotland, as Mr Hugh Miller states, that the nestlings become so fat that they would be unable to leave their burrows, were it not that the old puffins feed them, when their wings are grown, on sorrel leaves to reduce their size, that they may be able to escape from their burrows. As they lay two eggs, they have generally two of a brood to provide for. Pennant states that "they show vast affection towards

their young, and seem totally insensible of danger in the breeding season. If a parent is taken at that time and suspended by the wings, it will in a sort of despair treat itself most cruelly, by biting every part it can reach ; and the moment it is loosed, will never offer to escape, but instantly resort to its unfledged young." Audubon, who gives a most interesting account of the puffin, mentions the extraordinary affection manifested by these birds to each other, for whenever one fell dead or wounded on the water, its mate, or a stranger, immediately alighted by its side, swam round it, pushed it with its bill, as if to urge it to fly or dive, and seldom would leave it till an oar was raised to knock it on the head, when at last, aware of the danger, it would plunge below in an instant. Affectionate as they are to their young and to each other, they experience no mercy from man. Willoughby, nearly two hundred years ago, remarks that the marksmen in the Isle of Man take the puffins, when they are sitting on their eggs, with snares fastened to the top of long poles, and so put about their necks ; and Mr John M'Gillivray mentions, that in St Kilda, where they abound, they are captured in a similar manner, 300 in the course of a day being thus snared by an expert birdcatcher. Mr James Wilson, in his very interesting " Voyage Round the Coast of Scotland and the Isles," says, " These birds are caught by stretching a piece of cord along the stony places where they chiefly congregate. To this cord are fastened, at intervals of a few inches, numerous hair-nooses, and from time to time, when the

countless puffins are paddling upon the surface, in go their little web feet, they get noosed round the ankle, and no sooner begin to flap and flutter, than down rushes a ruthless widow woman and twists their necks." The widow alluded to lived chiefly on the puffin in its season. After the breeding season, they are very numerous about Ailsa and Arran. They have rather a pert appearance; and when an attempt is made to frighten them, instead of taking to flight, they dive under water, and bolt upright again at some distance. They find difficulty, indeed, in taking wing, though they can fly pretty well when once up. As they are not good in braving the storm, in tempestuous weather they take shelter in creeks or on the shore. When suddenly overtaken by a storm at sea, they are often drowned; and after a squall, we have occasionally found them dead on the shore.

The COMMON, or FOOLISH GUILLEMOT—*Uria troile*, Linn.—Guillemot is the French name given to it by Buffon. It has several provincial names, such as Willock, Skout, Sea-hen, Strany. It has been called the Foolish Guillemot, because some of them appear to be very stupid, not becoming cautious from experience, but suffering themselves to be repeatedly shot at, as if they did not know the danger; for notwithstanding they have seen their associates drop at every fire, they continue to whirl about in the same circle, and to alight again in the same place where they were first disturbed. Others, however, are sufficiently alert.\* The Craig of Ailsa is one of their breeding

\* Bewick.



places. The female lays only one egg, which is large in proportion to her size, being about 3 inches in length. The bird itself weighs about 24 oz., and measures 17 inches in length, by 27 in breadth. The bill is about  $2\frac{3}{4}$  inches long, both mandibles slightly notched near their points. They use their wings under water. They can use them also in the air, but they generally prefer swimming to flying. They seem incapable of taking flight except from the water. The Rev. G. M. Black, writing from the coast of Down to Mr Thompson, remarks: "A guillemot was brought to me a short time since, which I at first thought had been wounded, as, when put down on the ground, it made no attempt either to walk or fly, but was very bold, striking hard with its bill. When I afterwards took it to the beach, within a few paces of the sea, the eager attempt to get into its proper element was very amusing, as, aided both by legs and wings, it shoved itself along in a most awkward way. On reaching the sea it at once dived, rose fifty yards off, flapped its wings, and seemed well and happy." A friend of Mr Thompson's, fishing in Belfast Bay, expresses himself as much entertained by observing the habits of these birds and their young. "The young were about one-third less than their parents, and uttered a shrill, squeaking note, while that of the old one was hoarse and guttural, like a croak. They admitted of a very close approach. The old birds dived several times, and on each occasion brought up a fish, which was always given to the young. The latter rested quietly on the surface of the water, and

never attempted to fish for themselves, but hurried forward rapidly to their parents when they brought up any prey." After tempestuous weather, these birds are occasionally found washed ashore on the Irish shore, as they are also on the coast of Ayrshire.

The RAZOR-BILL—*Alca Torda* and *Alca Pica*, Linn.—This bird, like the guillemot, abounds at Ailsa, one of its breeding-places. Early in May they take possession of the highest cliffs, where they deposit their single large egg on the bare rock. The birds sit closely together, and, though congregated in great numbers, each knows its own egg, and hatches it. Bewick says, "It has often excited wonder, that as the eggs have no nest or bedding to rest upon, they are not rolled into the sea by gales of wind, or on being touched by the birds; it is also said, that if they are removed by the human hand, it is extremely difficult to replace them in their former steady situation." They are three inches long, and are gathered for food in great numbers from the rocks. The cry of the razor-bill is a kind of croak, harsh and disagreeable; and by an imitation of it, the birds are drawn out from their lurking-places by the fowlers.

The LITTLE AUK—*Alca alle*, Linn.—Though rare in Britain, has been seen at Ailsa. It is a small, plump, round-shaped bird, measuring only nine inches. The bill is black, and so is the flat crown of the head. The upper parts of the plumage are of the same colour, except a white bar across the wings. The under parts are white. These birds are inhabitants of Spitzbergen, Greenland, and Newfoundland, where

they are called ice-birds. Mr Thompson mentions (vol. iii., page 220) "that Mr Darragh (of the Belfast Museum), when paying an ornithological visit to the Craig of Ailsa, on the 19th May 1849, saw four little auks. One of them remained on the water at the base of the craig until approached by the boat within about eight yards, when it flew off in the direction which its three companions had taken a minute before." Their being seen, adds Mr Thompson, at this fine breeding-haunt of "rock-birds," inclusive of the gannet, in the middle of May, suggests the probability of their nesting there. Captain Beechy, in his account of the Voyage towards the North Pole in 1815, remarks: "At the head of the bay there is a high pyramidal mountain of granite termed Rotge (*i. e.*, Little Auk) Hill, from the myriads of small birds of that name which frequent its base. They are so numerous, that we have frequently seen an uninterrupted line of them extending full half-way over the bay, or to a distance of more than three miles, and so close together that thirty have fallen at a shot. This living column on an average might have been about six yards broad, and as many deep. There must have been nearly four millions of birds on wing at one time."

The KITTIWAKE.—*Larus tridactylus*, Linn.—*L. rissa*, Brunn.—Though gulls of various kinds abound in Ailsa, rejoicing in it as their fatherland, we shall allow them to pass undisturbed, noticing only the gentle little kittiwake; and we are led to select it in consequence of some personal acquaintance with one

of this family. It is a small bird, measuring only about 16 inches in length, and weighing about 14 oz. The bill is greenish yellow, the head, neck, tail, and other parts of the body, white. The legs are dusky, and the hinder toe not bigger than a small wart, hence the Linnean name *L. tridactylus*, or three-toed gull. It frequents rocky promontories and islets in the sea, preferring those where there are cliffs and precipices. Dr J. D. Marshall writes thus respecting them :—" This is by far the most common species of gull in Rathlin ; and when I was there in June 1834, they were in such countless multitudes as to darken the air over our heads. The nests were formed of dried grass, &c. When I looked down from a height on these nests, it appeared wonderful how the birds found room to sit and hatch their eggs or tend their young, for they were placed on the shelf of a rock so near to each other that the birds sat in contact." Mr Thompson (vol. iii., p. 341) says: " In June 1832, I saw kittiwakes in immense numbers about their nesting-places in the range of magnificent cliffs westward of Horn Head. Looking eastward I saw at one view thousands sitting on their nests, which are all placed on narrow horizontal shelves for about half-way up the rocks from the water, and in depth only sufficient to contain a single row of them. They are placed close together, and the birds are then as near to each other as they can sit. The nests are very thick, fully three inches, composed of the grass *Elymus arenarius*, and exhibit no lining of feathers. Some of the old birds exhibited the pretty and grace-

ful gestures of the dove when cooing, and looked consummately happy." Such a spectacle is fitted to give great delight to a benevolent mind, in contemplating the amount of happiness which, in a wild place, God is giving to so many of his beautiful creatures. Mr Thompson informs us that there is quite a line of demarcation betwixt the nesting-places of the kittiwake and the herring-gull, the former occupying the lower, and the latter the upper half of the same cliffs. Mr G. C. Hyndman mentions, that when he was sailing, on 24th June 1844, some miles from Ailsa, kittiwakes, which breed in quantities on that majestic pyramidal rock, were attracted by the bait that was out for mackerel. Perceiving this, he threw out pieces of fat meat to them, when about twenty gathered round the vessel, and followed it for two or three miles.

Two years ago, I was led to take an interest in one of these pretty little kittiwakes. A boy brought it to the door, saying he had got it in the Isle of Arran, and wishing me to buy it. I gave a sixpence for it, that I might free it from his hands and set it at liberty. I was sorry, however, to find that he had clipped one of its wings, so that when let loose in the garden it attempted to escape, half running, half flying. I saw that it would have been cruelty to commit it to the sea in that state, and therefore resolved to keep it till the feathers of the wing were grown. Wishing to make it happy in its temporary confinement, I treated it with all possible kindness; and a member of the household, to whom even the wild birds in the garden got attached, and became so

tame that some of them would eat out of her hand, showed even more than her usual kindness to the poor little kittiwake—but all in vain. It never put the least trust in any of us, even when giving it food. I think it could never forget the harsh usage it had received from its captor before it came into our hands; and could it have spoken, we may suppose that it would have said, "*Timeo Danaos et dona ferentes.*" We got it in autumn and kept it all winter. Being in a walled garden, with its single wing it could not escape. We wished to make it as comfortable as possible during the cold winter nights, and for this purpose placed near it a barrel on its side littered with hay; but it would never enter it, and if put into it, it would not remain. To give it a resting-place removed from the ground, I laid a large stone in a sloping position against the garden wall, and this it constantly chose as its roosting-place by night. Even in the coldest winter nights, when one might have thought that its little toes would have been frozen, this hardy little three-fingered Jack kept to its favourite station, and was found on the stone in the morning. When spring returned, I hoped that the feathers of its wing would soon be so far grown that it might be allowed to return to its kindred in Arran or Ailsa, but it dwindled and became emaciated, and finally died, in consequence, it is probable, of injuries it had received before it came into our hands.

In describing Ailsa, it would be unjustifiable not to treat a little of the solan goose, seeing that Ailsa is the only place in the West that it honours as a breed-

ing residence. It has several names. Among the learned it is called *Sula Bassana*. Its generic name is from its Norse name, *Sule*; and its specific name is from our own Bass Rock, on the east coast of Scotland, which, from time immemorial, has been one of its favourite residences. Its Scottish name, *Solan*, is derived from its Norse name, *Sule*; and its English name, *Gannet*, is a lengthened form of its Welsh name, *Gan*. It is a great bird, three feet in length, by six feet in breadth. The greater part of the plumage is white. It is a strong, fierce-looking fowl, with a long sharp bill, which it is said to dart at the eyes of those that assail it. They form their nests in caverns or on ledges of the rock. "The male and female hatch and fish by turns; the fisher returns to the nest with five or six herrings in its gullet, all entire and undigested, which the hatcher pulls out from the throat of its provider, and swallows them, making at the same time a loud noise." Martin says that "the solan geese have always some of their number that keep watch in the night time, and if the sentinel is surprised (as it often happens) all the flock are taken, one after another. But if the sentinel be awake at the approach of the creeping fowlers, and hear a noise, he cries softly *grog, grog*, at which the flock do not move; but if the sentinel see or hear the fowler approaching, he cries softly *bir, bir*, which would seem to import danger, since, immediately after, all the tribe take wing, leaving the disappointed fowlers without any prospect of success for that night."

The depth to which gannets often dive in fishing is

proved to be very great. Mr W. Thompson, to whom we have been so much indebted, says (vol. iii., page 258): "Having heard from two friends that were grouse-shooting at Ballantrae (on the Ayrshire coast, near to Ailsa), that they had seen great numbers of gannets lying in a state of decay in holes on the beach, and that these birds had been taken at extraordinary depths in the fishermen's nets, I made particular inquiry on the subject from a worthy resident of my acquaintance (postmaster, &c., of the village), and received the following reply—'Gannets are very commonly caught about Ballantrae in the fishermen's nets, which are sunk from 9 to 20, but sometimes to the depth of 30 fathoms, or 180 feet. They are taken at all these depths, when the water is rough as well as smooth, in both the cod and turbot nets. Of the greatest quantity taken at one time, John, son of Alexander Coulter, can make oath that he took ninety-four gannets from one net at a single haul a few years ago. The net was a cod net, about sixty fathoms long. The birds brought up the net, with its sinkers and fish, to the top, where such as were not drowned made a sad struggle to escape. There were four nets in this train; but the above ninety-four were in one of the nets, and there were thirty-four additional birds in the other part of the train, being 128 gannets in all.' A scientific friend, who had watched the proceedings of the gannets on the Irish coast, remarked that, when in pursuit of prey, they invariably went down perpendicularly, remained a long time under water, and never reappeared without a



fish crosswise in their bills, which was thrown up into the air, caught by the head in its descent, and swallowed." The Rev. G. M. Black writes, "One that happened to be caught asleep was brought on board the boat and tied by the leg to one of the 'traps.' To test its appetite, some fish were thrown to it, when, without drawing breath, it swallowed four full-grown mackerel, and probably would have disposed of more, had not the fishermen thought it had enough, at least, for one meal."

We have elsewhere mentioned that gannets are taken by fastening a fish to a strong board, which is floated, and the bird coming down with great impetus from on high on its prey, has its neck dislocated. The force with which a gannet plunges on a fish is astonishingly great. Mr John Macgillivray says: "The following was related to me by more than one person both in St Kilda and Harris, and I believe it to be true. Several years ago, an open boat was returning from St Kilda to Harris, and a few herrings happened to be lying in the bottom close to the edge of the ballast. A gannet passing overhead, stopping for a moment, suddenly darted down upon the fish, and passed through the bottom of the boat, as far as the middle of the body, which, being retained in that position by one of the crew, effectually stopped the leak till they reached their destination." We have often heard of the horn of the *Monodon* or sea-unicorn having been driven through the plank of a vessel in the Eastern seas, and of the vessel being kept from sinking by the horn remaining in the per-

foration till the harbour was reached. There is a common saying, "Seeing is believing;" and in the Museum of the East India House, London, a few weeks ago, I actually saw this very plank, with the identical horn which had thoroughly pierced it still remaining in the perforation which the powerful sea-monster had made.

It may be interesting to some to learn what has been said of Ailsa by other writers besides those we have already quoted; but before doing so, I am tempted to give another passage from Mr Thompson's "Natural History of Ireland," from which I have already taken copious extracts. "Though I have not visited Ailsa," he remarks, "its noble pyramidal form, rising to the altitude of 1100 feet above the sea, has always been familiar to me, forming, as it does, so fine a feature in the scenery, when viewed from the north-east coast of Ireland. But while shooting on moors in Ayrshire, I have had the pleasure of making a nearer acquaintance with it, as thence casting the eye seaward, it was always the grandest object within view. On one occasion, it was observed from the inland mountains that intensely black clouds occupied the west and north-west, and dismally grim did Ailsa arise from the dark waters;—again that it appeared covered with snow towards the summit, so exquisitely white were the clouds resting there,—and several times, during two successive days, a dark cloud was seen rising from the apex, like smoke from a volcano, which the configuration of the island so greatly resembles."

At the season when the young gannets are about fledged, great numbers of them are caught in their nests at the Bass, and at Ailsa, and carried to Edinburgh, and Ayr, and to other places throughout the country, where they are still regarded by some as a delicacy, and eaten as a whet before dinner. It is an acquired taste, however, and we had learned in our younger days to eat them with relish by getting them in their season both in Edinburgh and Ayr. It is many years since we tasted them, and we rather suspect that their very strong fishy flavour would be more than enough for us now-a-days. It is interesting to read what Sir William Brewster, Bart., says respecting the solan geese in his journal which he kept when he travelled in Scotland in 1635, and which was published by the Chatham Society in 1844:—  
“In the Isle of Elsey, which is my Lord Castle’s, there breed abundance of solenne (solan) geese, which are longer necked and bodied than ours, and so extreme fat are the young, as that when they eat them they are placed in the middle of the room, so as all may have access about it, their arms stripped up, and linnen cloths placed before their clothes to secure them from being defiled with the fat thereof which doth besprinkle and besmear all that come near unto it.” Sir William, doubtless, is here speaking of the Ayrshire epicures of 1635. In 1851, it is, we doubt not, still tasted by our gourmands as a whet, without the serious preparation of stripping the arms, and towelling the vest and nether garments. We have heard, indeed, of one with a pretty sharp-set maw, who, having been told

that they were used as a whet to quicken the appetite for dinner, set briskly to work, but by and by complained that, though he had eaten almost the whole of one, he felt not a bit more hungry than when he began. But, though they may be used as provocatives by those who can "dine satisfactionably every day," according to the Irishman's reading of the text, they are regarded as one of the richest blessings of a kind Providence by the inhabitants of St Kilda, and other islanders, and are carefully stored up to be their chief support during winter. Their eggs also are laid up for the same purpose; for, though they would not lay more than one egg if left undisturbed, the fowlers know that they will lay three if the first and second are taken away, and consequently they leave only the third to be hatched. The mass of eggs thus obtained they secure in stone receptacles built for the purpose, in which they cover the eggs with peat-ashes to exclude the air; and thus protected from rain and atmospheric influence, they continue fresh during the winter. For the sake of the eggs they visit only the nests that are most easy of access, but in robbing the nests of the young birds they are exceedingly venturesome, as their support in winter depends so much on the result. Then, says Bewick, "the adventurous fowler, trained to it from his youth, and familiarized to the danger, must first approach the brow of the fearful precipice to view and trace his progress on the broken pendant rocks beneath him: over these rocks, which (perhaps a hundred fathoms lower) are dashed by the foaming surge, he is from a prodigious height

to be suspended. After addressing himself in prayer to the Supreme Disposer of events, with a mind prepared for the arduous task, he is let down by a rope, either held fast by his comrades, or fixed into the ground on the summit." " Sometimes by swinging himself from one ledge to another, with the help of his hook he mounts upwards, and clambers from place to place ; and at other opportunities, by springing backwards he can dart himself into the hollow caverns of the projecting rock, which he commonly finds well stored with the objects of his pursuit, whence the plunder, chiefly consisting of the full-grown young birds, is drawn up to the top, or tossed down to the boat at the bottom, according to the situation of concurring circumstances of time and place. In these hollows he takes his rest, and sometimes remains during the night, especially when they happen to be at such vast and stupendous heights. To others of less magnitude the fowlers commonly climb from the bottom, with the help of three hooked poles only, by which they assist and push or pull up each other from hole to hole, and in this manner traverse the whole front of the frightful scar. To a feeling mind, the very sight of this hazardous employment, in whatever way it is pursued, is painful ; for indeed it often happens that these adventurous poor men, in this mode of obtaining their living, slip their hold, and are precipitated from one projection to another with increasing velocity, and fall mangled upon the rocks, or are for ever buried in the abyss below." We remember reading of a case in point enough to make our blood run chill. One

of these adventurous fellows had been let down from a precipice of great height till he found himself opposite to a hollow cavern in the projecting rock where nests might be expected. As the rope descended perpendicularly, he succeeded in giving to it an oscillatory motion, so that though by the swing in one direction he was carried farther from the cavern, the next oscillation brought him nearer to it, and soon by his usual dexterity he was swung into the cavern, and got firm footing on the ledge of the cliff,—but alas! he had inadvertently let go his hold not only of the rope by which he had been suspended, but also of the smaller rope attached to it by which the other is brought near when required. The rope; from the impulse it had received, continued to swing like a pendulum, and fain would he have grasped it, but at its nearest approach it was beyond his reach, and he saw to his horror that at every swing it was farther from him—that in a little it would be at rest, hanging perpendicularly from the upper projecting cliff, and of course hopelessly beyond his reach. Life and death were in the balances. Was he to give himself up as lost, and by a lingering death to perish of hunger in the cavern, or was he to make an effort to reach the rope, with the certainty, if he missed it, of being dashed on the rocks or of perishing among the waves a hundred fathoms below. After a moment's deliberation, he watched with the utmost intensity of feeling the next approach of the rope, and summoning all his strength he sprung forward to grasp it. The leap was tremendous, but it was successful. He

caught the rope, put his foot in the loop, made the signal to his companions above, and was drawn up, not knowing for a time whether he was dead or alive.

We shall now give a short extract from Donald Monro, Dean of the Isles, who published an account of the Hebrides in 1549 :—" North-west from the ile of Man sixty myles off, layes Elsay an iyl, ane myle lange, wherein is ane grate high hill round and rough, and ane heavin (haven), and als abundance of soland geise, and ane small poynt of ane nesse whereat the fish bottles lyis, for in the same ile is very good killing, lyng, and other whyte fishes. Forenent this ile layes Carrick on the south-east pairt, Ireland on the south-west pairt, and the lands of Kintyre on the west and north-west pairt; the said Elsay being neirhand midsea betwixt the said marches." The nests of the solan geese are composed of grass and seaweeds, occasionally intermixed with sticks; but Martin states that " the steward of St Kilda told him that they found in their nests a red coat, a brass dial, an arrow, and some Moluca beans, no doubt all found floating in the sea. The young are spotted like a starling. At first the young are fed with pulpy matter from the stomach, and afterwards with fish which they disgorge. They were brought to the royal table of old, and so were seals and porpoises, but chiefly their tongues, as a delicacy." We shall give another short extract from Sir William Brewster's Journal. In his way between Glasgow and Erwin (Irvine), July 1, 1635, " he caught sight of

Ailsa Craig." "One more remarkable isle here shows itself at forty miles' distance ; this is placed in the sea about sixteen miles from shore. It is a mighty high rock, seeming very steep and high, round at the top ; the name of it is Ellsey, and it belongs to my Lord Castle : not inhabited, but with abundance of fowl, and two eyries of goosenhawks, this year stolen by some Highlanders. This rock or island was in our view three days whilst we travelled betwixt sixty and seventy miles, and when you are at a great distance it presents itself in shape like a sugar-loaf, and when you approach nearer it seems lower and flatter at the top, but it is a much-to-be-admired piece of the Lord's workmanship."

This reminds me that the first time I saw Ailsa was probably from the same place that Sir W. Brewster first saw it. In returning home after my first winter at the University of Edinburgh, another college stripling and I resolved to come by Glasgow and Ayr, both of which were new to us. The spring day was clear and fine ; and sitting down on a stone to rest, I said to my companion, "What can that sugar-loaf-like hill be which rises from the plain at a great distance ?" He was as ignorant as myself. We did not even know that that plain was the sea ; and as little did I wot that that conical hill, with the sea in which it was placed, were to be daily objects of interest to me from Stevenston Manse during the greater part of my life. Truly the lines have fallen to me in pleasant places ; and I may add, "yea, I have a goodly heritage," if I can with truth say like the Psalmist,



“The Lord is the portion of mine inheritance, and of my cup ; thou maintainest my lot.”

We shall now give Pennant's description of Ailsa in 1772 :—“ June 25. After a very tedious calm, we reach the Craig of Ailsa, and anchor on the N.E., within fifty yards of the side, in twelve fathoms water, gravelly bottom. On this side is a small beach. All the rest is a perpendicular rock for an amazing height, but from the edges of the precipice the mountain assumes a pyramidal form. The whole circumference of the base is two miles. On the east side is a stupendous and amazing assemblage of precipitous columnar rocks of great height, rising in wild series one above the other. Beneath these, amidst the ruins that had fallen from time to time, are groves of elder trees—the only trees of the place,—the sloping surface being almost entirely covered with fern and short grass. The quadrupeds that inhabit the rock are goats and rabbits. The birds that nestle in the precipices are numerous as swarms of bees, and not unlike them in their flight to and from the Craig. On the verge of the precipice dwell the gannets and shags. Beneath are guillemots and the razor-bills ; and under them the grey gulls and kittiwakes helped by their cry to fill the deafening chorus. The puffins made themselves burrows above ; the sea-pies found a scanty place for their eggs near the base. Some land birds made this their haunt : among them ravens, hooded crows, pigeons, wheatears, and rocklarks ; and what is wonderful, throistles exerted the same melody in this scene of horror as they do in the groves of Hertfordshire.

“Three reptiles appeared here very unexpectedly,—the naked black snail, the common and the striped shell-snail, not volunteer inhabitants, but probably brought in the salads of some visitants from the neighbouring shores.”

“This rock is the property of the Earl of Cassilis, who rents it for £33 per annum to people who come here to take the young gannets for the table, and the other birds for the sake of their feathers. The last are caught when the young birds are ready for their flight. The fowler ascends the rocks with great hazard, is provided with a long rod, furnished at the end with a short hairline with a running noose. This he flings round the neck of the birds, haws it up, and repeats it till he takes ten or twelve dozen in an evening. I cannot learn where the feathers are used. On the beach we find the ruins of a chapel, and the vestiges of places inhabited by fishermen, who resort here during the season for the capture of cod, which abound here from January to April on the great bank, which begins a little south of Arran, passes this rock, and extends three leagues beyond. The fish are taken with long lines. \* \* \* The fish are dried and then salted ; but there are seldom sufficient caught for foreign exportation. The castle is of difficult ascent. It is a square tower of three storeys, each vaulted, placed pretty high on the only accessible part of the rock. The path is narrow, over a vast slope, so very steep that it wants but little of a true precipice. The walk is horrible, for the depth is alarming. It would have been thought that no-

thing but an eagle would have fixed his habitation here, and probably it was some chieftain not less an animal of rapine. The only mark of civilization I saw in the castle was an oven, a conveniency which many parts of North Britain are yet strangers to."

"In 1597, one Barclay of Ladyland undertook the remarkable design of possessing himself of this rock, and of fortifying it for the service of the Spaniards. He arrived there with a few assistants, as he imagined undiscovered; but one day walking alone on the beach, he unexpectedly encountered Mr John Knox, who was sent to apprehend him; and the moment he saw the unfriendly party, in despair rushed into the sea and put an end to his existence."\*

"We made a hearty dinner under the shade of the castle, and even at that height procured fine water from a spring within a hundred yards of the place. The view of the Bay of Girvan in Carrick, within nine miles, and that of Campbeltown in Argyleshire, about twenty-two miles off, bounded each side of the firth. The weather was so hot that we did not ascend to the summit, which is said to be broad, and to have had on it a small chapel, designed, as is frequent on the promontories of foreign shores, for the devout seaman to offer up his prayer of supplication for a safe voyage, or of gratitude for a safe return."

We cannot conclude without giving a short extract from the New Statistical Account of the parish of Dailly, contributed by the Rev. Dr Hill, now Professor of Divinity in the University of Glasgow:—

\* Spottiswood's History of Scotland.

“ Although the extremity of this parish is nearly two miles distant from the seacoast, yet the island of Ailsa, about fifteen miles west from the town of Girvan, is considered as belonging to Dailly, being included in the barony of Knockgirvan, a part of the Marquis of Ailsa's property which lies in this parish. It is a huge rock, perhaps two miles of circumference at the base, and about 1100 feet above the level of the sea. Seen from the south or north, its shape is very much that of a cone. Its appearance from the east is more flattened. It is precipitous on all sides, and is accessible only on the north-east, where there is a small beach. The cliffs in several places are columnar. A considerable way up the rock are remains of buildings, supposed to have been a tower or castle, and a chapel. Very fine water is found on the rock, and very near its summit. There is little pasture on it. Numberless flocks of birds frequent it, and particularly gannets or solan geese. It is chiefly from their feathers that the rent of the island is derived, and it is only during the time that the birds are sought for on account of their feathers that any one resides upon it. There was recently a plan in agitation for making Ailsa a fishing-station for the supply of Glasgow and Liverpool, by means of the steamboats which pass it regularly. Some buildings were commenced for the purpose, but the plan has not been carried into effect.”

# THE TWO CUMBRAES.

## PART IV.

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### THE GREAT CUMBRAE.

“ ’Tis pleasant to wander along on the sand,  
Beneath the high cliff that is hollowed in caves;  
Where the fisher has put off his boat from the land,  
And the prawn-catcher wades through the shore-rippling  
waves.  
Bright gleam the white sails in the stout rays of even,  
And stud, as with silver, the broad level main;  
While glowing clouds float on the fair face of heaven,  
And the mirror-like water reflects them again.”

“ When the heat of mid-day is past, and the refreshing seabreeze invigorates the exhausted frame, it is delightful to wander along the beach, and observe the various objects there which are full of interest. The seashore is indeed the last place in which a true lover of nature can be idle. Such a number of beings, varying in form and character, in habits and manners, and in the design of their existence, here surround him, as may often employ his time and attention. Yet how many annually visit the sea—some for the sake of health, some for amusement and pleasure—who leave it without having examined a single one of the natural productions with which it teems—an investigation

which would have made an uneasy hour one of gratification and instruction.”—*Sights in all Seasons*.

THERE are two islands of Cumbray or Cumbrae—the Great Cumbrae and the Little Cumbrae, or, in the language of the district, the *Big Cumbrae* and the *Wee Cumbrae*. They are separated from each other by a strait less than a mile in breadth. They are both in the county of Bute; but while the Big Cumbrae forms a parish connected with the presbytery of Greenock, the Little Cumbrae forms an appendage (*quoad sacra*) of the parish of West Kilbride, connected with the presbytery of Irvine in the county of Ayr. I could not easily tell how often I have visited the Big Cumbrae, but most of my visits were in the way of clerical duty, and had no reference to natural science. Some of them were before steamers had begun to ply on the lower parts of the Firth of Clyde; and old Mr Adam, who was then the parish minister, and a very eccentric character, used to allege that the Prince of the Power of the Air surely bore me a grudge, as in coming to them I almost always had to encounter a storm. Once, I remember, when he was depending on me for aid on a sacramental occasion, though a boat had come over for me to Portincross on the coast of Ayrshire, he began to fear that, owing to the storminess of the day, I would not venture to cross. He kept a good lookout, however—saw the boat start—saw it, after many tackings, reach the Little Cumbrae, but there it disappeared. It had, from stress of weather, run into a creek, and there he thought it must remain. Again,

however, he saw it venturing out, and with well-reefed sail making for the strait betwixt the islands,—on such a day, owing to the strong breeze and strong tide, a dangerous passage,—and seeing the greatness of our peril, it was too much for him, and he ran into the manse. The boatmen were noble sailors, and, by the kind providence of God, we got safely into the harbour.

The Large Cumbrae is an island in the Firth of Clyde, about four miles from the island of Bute, two miles from the parish of Largs in Ayrshire, and less than a mile from the Little Cumbrae. It is about three and a-half miles in length, by two and a-half in breadth. The surface is undulating, rising in some places to the height of 500 feet. There is a flat space round the island betwixt the sea and the rising ground, but this space bears marks of having been at one time under the sea, as the soil in some places is composed of sea-shells and sand. The climate of the island is very salubrious. I remember the old minister, Mr Adam, told me on one occasion, that there had not a single death occurred in the island during the past year. The population was then about 700; now, I suppose, it is more than double that number, as it has become a favourite place of resort of seabathers, so that the village has greatly increased, and some nice villas have been built along the shore. Though to our taste it is too limited in its range for a place of permanent abode, we do not wonder that it is much liked as a temporary residence. The views from it are surpassed by none in the Firth of Clyde,

and that is saying not a little. From the high grounds above the village they are truly magnificent. On one side you have in the distance the rugged mountains of Argyleshire—in an opposite direction you have Ayrshire and Galloway bounding the view by land, and Ailsa seen at a distance over Little Cumbrae in the foreground. On the right hand you have the peaks of Arran in their grandeur, with a fine view into Glen Sannox; and on the left hand you have Kelburn, its finely-wooded banks, and the old castle of Fairly, of classical celebrity, the sweet village of Fairly, and the no less sweet town of Largs, memorable as the battlefield on which of old the Norwegians were routed, and better known in the present day for its attractions as a delightful watering-place. In proof of the remarkable beauty of the surrounding scenery, I have occasionally mentioned a jocular conversation betwixt the late Mr Watt of Greenock and myself, when, many years ago, we met at a dinner-party in Edinburgh. After the usual greetings, he said to me, “I was down at Cumbrae this morning.” This was before the introduction of steamers and railways, and next to impossible, unless he had possessed the velocity, not to say the ubiquity, of a bird. Nevertheless I immediately responded, with corresponding gravity, “So was I.” He saw that I understood him, and said to me, smiling, “Was that in Leith Walk?” I said, “It was.” We had both gone to see an excellent panorama of the Bay of Naples, which was then exhibited at the head of Leith Walk, and it had struck both of us as



being exceedingly like the view from Cumbrae;—Arran, though it had not a volcano, being very like Vesuvius and the adjoining mountains, and the Little Cumbrae bearing a striking resemblance to the Island of Capri.

I find that I have short notes of three short excursions made to Cumbrae for scientific purposes. To a person who has little time to spare for such things, the steamers present great facilities. The daily steamer during summer to Arran sails at ten o'clock, and if a day is chosen when a pleasure sail is projected, five or six hours may be spent in the island before she returns in the evening. Another steamer for Glasgow leaves Ardrossan at 8, A.M., by which you may be put ashore at Millport in Cumbrae at nine o'clock, and have the whole day in the island, as the return boat for Ardrossan does not touch at Millport till six o'clock in the evening. In June 1846, Major Martin and I sailed for Cumbrae for a day's dredging. The day was fine, and we were pretty successful, though we got little that we had not found before in Arran. Among the mollusca we captured were the following: *Lima hians*, *Pecten striatus*, *Pecten tigrinus*, *Trochus milligranus*, *Trochus tumidus*, *Natica Montagu*, *Venus orata*, *Venus fasciata*, *Tellina crassa*, *Tellina donacina*, *Eulima polita*, *Kellia suborbicularis*, *Cyprina minima*, and the finest specimen of *Fusus Boothii* we had ever seen, about an inch in length, and beautifully marked. We got some good seaweeds, *Polysiphonia parasitica*, *Padinella parvula*, and *Peyssonelia Dubyi*. The best

zoophytes we fell in with were *Plumularia pinnata*, *Antennularia ramosa*, and one specimen of *Antennularia antennina*, the only one I ever got in the West. The dredge brought up several specimens of *Echinus sphaera*, *Echinus miliaris*, *Echinocyamus pusillus*, *Amphidotus cordatus*, and *Amphidotus roseus*. The day was delightful—quite a day for *Beroës* to enjoy themselves; and we saw several beautiful specimens of *Beroë cucumis* floating around the boat. One beautiful little creature we dredged, which we had never seen before. It was like a little fish, about the size of a minnow. It had no eyes, no fins, but a membrane along the back and belly instead of a fin, and it had a little crest on the head. When put into a tumbler of seawater, it darted about with great velocity; but it could not keep itself suspended like a fish; for, when it ceased to move, it fell to the bottom, and lay motionless on its side. It was very pretty. I learned afterwards that it was a very rare creature—*Amphioxus lanceolatus*. I believe it is ranked among the *annelides*; and a very able paper respecting it, by Professor Allman of Dublin, may be found in the “Annals of Natural History.” When I first saw it in the dredge, I thought it might be the young of a very rare fish which had been got a few days before by my son, alive, under stones in shallow water. This, however, was a real fish, and certainly one of the most delicately beautiful fishes I had ever seen. It was the *Leptocephalus Morrisii*, sometimes called the ribbon-fish. In shape it somewhat resembles *Cepola rubescens*, the red band-fish, which, though

rare, is occasionally got alive by our fishermen ; and I have found it once or twice dead on the shore. It is a beautiful fish of more than a foot in length ; but the ribbon-fish, which is only six inches in length, is like an exquisitely-beautiful miniature of the band-fish. The body is compressed, about half-an-inch in breadth, and only the 12th part of an inch in thickness. The dorsal and ventral fins are united. The pectoral fins are small and delicate. It is of a light lilac colour, and nearly as transparent as glass, so that the shape and colour of objects could be quite clearly seen through it. The head is small. The snout is rather paler than the body. The eyes are large and beautiful. The eye is silvery, with a black iris ; and as the head is pellucid like the body, you can see to the very base of the eye all round, as if it were set in light pink-coloured glass. Above the ventral fin, which is fine, and consisting of innumerable rays, there is a pretty close line of blackish dots. There are also three faint longitudinal lines from the head to the tail. It was a most beautiful creature, and its movements were full of ease and gracefulness. Such was its transparency, that we could see all its inward structure ; and all its ribs, though of countless number, and not so thick as the finest hair. O ! may we remember that He, whose exquisite workmanship we behold in this tiny beauty of the deep, formed also the human heart, and that not one of the multitude of the thoughts within it can escape his notice ; for he searcheth all hearts, and understandeth all the imaginations of the thoughts ! If we seek him, he

will be found of us ; but if we forsake him, he will cast us off for ever. O ! may we seek him while he is to be found, and call on him while he is near ; for if in the name of our great High Priest we say, “ Pardon our iniquity, for it is great,” he will assuredly be merciful to our unrighteousness—our sins and our iniquities remember no more.

We kept the ribbon-fish in a tumbler of seawater for a fortnight, at the end of which time, though it was still living, its fine, delicate pink colour had become paler ; and being afraid that our lovely captive might die in our keeping, we took it back to the place where it had been caught, and had the pleasure of restoring it to its native element ; and it moved gracefully out of our sight, rejoicing, we doubt not, in its manumission.

There are two other things, which, though not got on this occasion, I think it well to mention as being got at Cumbræ. The one is a *Balanus*, the specific name of which, according to Brown’s illustrations, seems to be *Candidus*. It is by far the largest native *Balanus* or acorn-shell I ever saw. It was alive when sent to me by the fishermen who got it off Cumbræ, and as I put it into a vase of seawater it lived for several days ; but it was too far gone before it reached me to open the valves of its operculum, and send forth the *cirrhus*, which would have been as large as an infant’s hand. Its shelly receptacle, by which it had been fixed to the rock, was exactly eight inches in circumference, and its length, when it pushed out the valves of the operculum, was almost five inches. It had a goodly number of parasitical

inhabitants upon it,—two kinds of *serpula*, two kinds of *Anomia*, *Tubulipora patina*, *Laomedea geniculata*, *Clisia verrucosa*, *Hiatella arctica*, *Lobatulæ*, &c. The two largest opercular valves were fully an inch and three-fourths in length.

The other rarity, which it would be improper to omit, is a rare sponge, with a very jaw-breaking name, even *Halichondria infundibuliformis*, but we shall speak of it by its English name, *Funnel sponge*. This is regarded as very rare. Montague had never seen it when he published his work on sponges. I think, however, almost a dozen have passed through my hands, got from Cumbræ. I had the pleasure of sending a specimen of it to my good friend Dr Johnston, when he was preparing his work on sponges; and he, or rather his talented lady, did it the honour of figuring it for his book. These sponges are generally found attached to stones, and when placed in the cabinet with the stone as a pedestal, they are very handsome marine cups, very like in shape to a silver porter cup. I shall subjoin a portion of Dr Johnston's description of it.—“Sponge, forming a funnel-shaped cup, about three inches high and the same in diameter; the cup gradually evolving from a very short stalk, and rooted by a moderately spreading base. The texture and colour is uniform and spongy, finely reticulated, or rather porous; the walls about the eighth of an inch in thickness; and the rim brought to an edge, even, or sinuated, or fissured. Surface even and alike on both sides, excepting that the interior is more compact; oscula none. This fine

sponge is the British analogue of the Neptune's-cup of the Indian ocean ; and while it is vastly inferior in capacity, it excels the tropical species in neatness of texture, and in sponginess."

I forgot to mention among the shells *Lutraria elliptica*, as got at Cumbrae, of great size and in great abundance, and also *Pecten Islandius*, which is regarded as a rare shell, but is found in considerable plenty in winter and spring on the shore at Fintry Bay, but these are always dead shells, and we doubt not from some posttertiary deposit. The first specimen ever got in Scotland of *Panopea Norvegica* was found on the shore here, and probably from the same deposit. The fine shell *Pecten Danicus* is occasionally got here alive on the long lines, and was first found by Mr Blythe here, and called *P. nebulosus*.

Some time after this, I had another day's dredging with Major Martin at Cumbrae. We landed on the Allans, that is, the rocks that lie in the bay and render it a place of great security for vessels. In the New Statistical Account it is stated, "At Millport there is an excellent harbour capable of containing vessels of considerable burthen ; and a fine pier has been erected, mostly by the Marquis of Bute, on whose property the harbour stands. Near to this harbour there is also good anchoring-ground of considerable extent, and finely sheltered by two small rocky islands called the *Allans*; to which islands, by means of iron rings fastened in the rocks, both vessels belonging to the island, and others that resort thither

in stormy weather, are moored, and where they can ride in perfect safety during the greatest storms."

Cumbræ is associated in my mind with flocks of beautiful seafowl, and especially Terns, as it was there I first saw them congregated at one of their favourite breeding-places. They there in the summer season deposited their eggs, and reared their young, in numbers almost numberless, on the Allans, little flat islands already mentioned, in the mouth of the bay, giving much life and cheerfulness to Millport, which was then a sweet secluded marine village, having all the charm of the most beautiful scenery, and all the advantages of proximity to the sea, without any of the filth often to be found in fishing villages. The inhabitants were very unsophisticated. Few strangers visited them. One of the King's cutters generally lay there, but the captain was highly respectable, and resided in a house of his own called the Garrison, which afterwards became a residence of the Earl of Glasgow. The crew of the cutter were in general young men, natives of this little green island, and who generally married the young girls of the village. The tern, that "clean-looking, pretty bird," as Bewick calls it, was quite in keeping with the sweet, clean-looking place where it chose to dwell. It is often called the Sea-Swallow in England. Buffon calls it "*La Grande Hirondelle de mer*;" and in Scotland and Ireland it is very generally called the *Pirre*, from its cry, which resembles that word;—for the one of which we are now more particularly speaking is the common tern, the *Sterna Hirundo*, Linn. It is fourteen inches in

length, thirty inches in breadth ; the bill is crimson, tipped with black ; the head is capped with black ; the throat and all the under parts of the body are pure white ; the upper parts are of a fine pale lead-colour ; the tail is forked, and the greater part of it is white. At the time I first visited the Allans, where these elegant birds abounded, there were mingled with the common a few of the beautiful roseate, and some also, it is probable, of the arctic tern. Unless a person walked warily, he was apt to step on the eggs ; for in general there was no nest, except a little hollow in the sandy soil, in which there was only occasionally a very little dried grass, on which the eggs were deposited. The eggs are three in number, but sometimes six are found in the nest, and Montagu says at times as many as twenty, in which case there must be a general incubation of the eggs of several birds. Some think that the birds leave the eggs to be hatched by the heat of the sun ; but it is more generally thought, that, except in places where they are very much disturbed, they sit on the eggs during part of the day, and always during the night. It is very interesting to see them flying about near their resting-places, which, though generally on the seashore, or on some islet in the sea, are occasionally also near freshwater lakes. Mr Thompson has seen their nests among loose stones in little islets, in Port Lough, Donegal, and also on a narrow slip of land adjoining to Lough Neagh. He greatly admired their evolutions at Mew Island, on the coast of Ireland. Immense numbers of them



were flying around, poising themselves beautifully in the air, with their wings merrily wafting, or beating, to maintain their position. They looked out merely for their finny prey, which, soon as perceived, the wings were drawn quick as thought close to the body, and, like an arrow from a bow, they shot from such a height into the water, within a few yards of us, so as to be wholly immersed, or more rarely obtaining their prey at the expense of a partial ducking. It may be added, that when Mr J. N. Garret visited the same island, he saw the terns in great abundance, and, endeavouring to estimate their numbers, he considered that there were not less than 2000 within sight.

Montagu says, with respect to the mode of flying of some of the terns, that their evolutions are rapid and their turns short, by which means they sometimes escape the talons of predaceous birds of prey ;—that once, when he was observing a number of terns sporting over the water in a hard gale of wind, a peregrine falcon passed like a shot, singled out his bird, and presently coming up within the space, made a pounce ; but the great dexterity of the tern, by a quick and short turn, avoided the deadly stroke, and took a new direction. The falcon, by his superior velocity, soon regained sufficient elevation, and successively repeated his pounces ; but being still cleverly eluded, he at last relinquished the pursuit.

The tern we are next to name is the rarest bird that Cumbrae can boast of.

THE ROSEATE TERN.—*Sterna Paradisea*, Brunn.

1764—*Sterna Dougallii*, Mont. Had I not had Mr Thompson's exceedingly interesting Natural History of Ireland in my possession, I would have stated that this beautiful tern had been first discovered at Cumbræ, in 1812, by Dr M'Dougall of Glasgow. It had not, indeed, before this been observed in Great Britain or Ireland; but I learned from Mr Thompson's valuable history that it had been described by Brunich so far back as 1764, under the name of *Sterna Paradisea*. It was shot by accident on the Allans at Cumbræ along with some common terns, and the beautiful delicate blush colour of the breast and underpart of the body attracted attention, and led to the discovery that it was a distinct species. Dr M'Dougall sent a specimen of it to Montagu, who was delighted with it, and, describing it in the Supplement of the Ornithological Dictionary, expresses his belief that it was an entirely new species. It was distinguished from the other terns by the comparative shortness of its wings; by the whiteness of its plumage; by the elegance and comparative slowness of its motions, sweeping along, or resting almost immovably in the air like some species of hawks; and still more evidently by the beautiful blush colour of its breast, and the lower parts of the body. Mr Thompson says, that at Mew Island he could distinguish the roseate tern on the wing from the other species by its colour, and by its note, which, instead of sounding like *pirre*, resembled the word *crake*, uttered in a hoarse, grating key. Their flight was more graceful and buoyant than that of the other species. "When

they ‘sail upon the bosom of the air,’ the tail is borne so as to appear pointed; but is generally beautifully spread when their nest is approached, and when they swoop towards an intruder in anger. I have observed terns, too, apparently when not intent on prey, frequently pause, kestrel-like, in their flight, and remain with their body stationary in the air, but flapping their wings very quickly.” Audubon thus writes—“Beautiful, indeed, are the terns of every kind, but the roseate excels the rest—if not in form, yet in the lovely hue of its breast. As the unscathed hundreds arose, and clouded, as it were, the air, I thought them the loveliest birds of the sea, so light and graceful were their movements.”

“I was much pleased,” says Mr Thompson, “by remarking the following trait in the character of the terns:—When one is killed or wounded, all within view of the poor victim fly instantly towards it, and bewail its fate in the most piteous terms. The quickness with which they perceive its fall is surprising. They dart down till almost touching it, and, observing that it cannot rise, keep circling over it with the greatest vociferation. In this act the three species join, making common cause, no matter which kind is victim.”

It is painful to think how much these interesting creatures are harassed and destroyed. In some islets off the coast of Ireland, where they have breeding-places, hundreds of their eggs are gathered every day, and boys even remain on the islets during the night, that they may begin the work of pillage early in the

morning ; and no eggs are left to the poor birds to be hatched till the work of hay-harvest calls off the plunderers. Their diminution in many places is owing also to the unceasing wanton persecution to which the birds themselves are subjected in being killed by heartless shooters, who have no object in view but their destruction. Mr T. mentions, that in a forenoon in May, a party butchered not less than fifty, of which about a dozen were the roseate, and all were afterwards flung away as useless.—(Page 275). It is much to be regretted that the same spirit of wanton cruelty has shown itself at Cumbræ, so that the numerous pirres,—so light, and airy, and graceful in their shape and movements, so interesting in their wild, yet gentle, incessant cry,—have been destroyed or driven away. The native inhabitants seemed to love them, and guarded against molesting them ; but of late years, owing to the daily steamers, many summer visitors have been in Cumbræ, who, instead of delighting in the happiness of God's beautiful harmless creatures, have taken pleasure in harrying the nests, and annoying in every way these gentle terns, so that their numbers were soon diminished ; and the persecuted residue, seeking for themselves some quieter place of abode, have forsaken the Allans, so that Cumbræ can no longer boast of its roseate terns.

But though the *pirre*, and the *che-ep*, and the *crake* of the common, arctic, and roseate terns have ceased to mingle in wild harmony with the gentle murmur or the loud roar of the waves, there is no lack of birds in this green isle. The lively song of

the musical Mavis causes in spring every brake and bank and brae sweetly to resound. In days of yore, when bird-nesting was my delight, notwithstanding my unwillingness to do any injury to my feathered favourites, I took one from a nest of young thrushes, and brought it up with affectionate care. It amply repaid me; for it not only proved a noble songster, but it had an accomplishment which I think was peculiar to it—it was a notable bell-ringer. It took up this amusement, we may say, at its own hand. Thrushes in a wild state are dexterous in breaking the shells of snails, by dashing them against stones, that they may reach the animal, which they regard as dainty food. Not having snail-shells to break, by way of pleasant exercise it was in the habit of taking up a small stone in its bill, and striking with it upon the cup which contained its food. On seeing this, I hung up a hand-bell in a corner of its cage, laying a bent nail beside it. It was not long in taking up the nail, and, having approached the bell, it gave it a stroke, and started back surprised at the success of its own performance. It soon returned to the charge, and struck again and again, and then seemed to listen with wonder. But this was too good a thing to be given up; it continued to practise it every day at intervals as a favourite amusement. When from its perch it had poured forth its thrilling song, it descended to the floor of its cage, and made the clear tones of the bell a substitute for the varied notes of its mellow voice. It was amusing to behold it; for it laid on lustily, turning its bill with the stone or

nail back, as it were, over its shoulder, and bringing it down on the bell with an impetus like a little sledge-hammer.

Blackbirds so greatly abounded in Cumbræ, that a gardener, with whose cherries they made rather free, without compunction shot great numbers of them, and baked them in pies. My bird-nesting days were over ere I visited Cumbræ; but to a true lover of God's beautiful innocent creatures, a bird's nest is an object of interest even when his head is grey. Nine years ago, the whole family got much interested in a blackbird, who had built her nest in an apple-tree on the wall in our sweet garden at Stevenston Manse. She sat very closely when hatching, and though we often went up to her nest, she never moved. When her young ones made their appearance, we used greater freedom, going close to her and speaking to her, so that she became acquainted with us. My son, a boy of fourteen, proceeded farther, putting his hand to her bill and gently patting her head; and yet she sat still. On offering her food, though she would not take it out of his hand, she gobbled it up when he removed to a little distance. But, alas! she had less friendly visitors. One morning, on going to the nest, the dam was not seen, and the young birds seemed cold; and, on looking more narrowly, we saw that instead of five there were only three young ones in the nest, and a third one half-dead hanging by a twig. This gave us great grief. We concluded that a prowling cat had discovered the nest, and had killed the mother and some of her brood.

What were we to do with the orphans? We fed them all day, and in the evening we were glad to see the parents paying a very rapid visit to the nest, though seeming quite wild and frightened. We were pretty sure that the cruel cat would return during the night to have another feast; and we therefore took the nest into the house, and returned it to its place early in the morning. David repeated this for several nights, and we had the pleasure of seeing the mother paying stealthy visits to them during the day. As the base of the tree was barricaded with thorns, we began to hope that they would soon be fledged, so as to get out of the reach of their sharp-clawed enemies. One morning David awoke at three o'clock, and, though it was rather too early, being afraid that he might not awake at a more suitable hour, he placed the nest as usual in the branch of the tree. Alas! the enemy had come in the dawn; for when we went to the tree in the morning, the nest was torn down, the birds were away, and there was nothing but silence and desolation!

The last Cumbrae bird on which I shall descant is the Rook, *Corvus frugilegus*, Linn.; Scotice, *the Crow*. As the rook is a favourite of mine, I am glad that he has won the affections of our most distinguished naturalists. Mr William Thompson of Belfast, author of the "Natural History of Ireland," after stating the charges which are brought against the rook, declares himself decidedly in its favour. "It is true," he remarks, "that the rook is generally looked on by the farmer as an arch-enemy, but the

reason of this is, that the evil that it does is very apparent, while its virtues do not in so obvious a manner come under his cognizance. I have always been disposed to regard the rook as a bird intended by its Creator to check the unwonted increase of the insects most detrimental to the vegetation of the fields, and keep them within due bounds. Both England and Scotland furnish instances of the almost total destruction of crops in particular districts, consequent on the extirpation of the rooks. The evil that they do may be summed up under a few heads:—They pick up grain when it is just springing into the braird; when grain is lodged, they destroy it by lighting on it in numbers; they eat it, and carry it away when in stook; they pick up potatoes when planted; and they greedily devour young potatoes in autumn.”

Though these are heavy charges, as their counsel, we would humbly advise them to plead guilty on all the counts, in so far as to confess that they have at times, at least, committed the depredations with which they are charged. But surely it may be pleaded as an extenuation, that they were only satisfying the cravings of nature; and, if that will not do, we must wax bolder and say in their behalf that they are only taking what they might justly claim, for is not the labourer worthy of his hire? Before they thus lay hold on their reward, they have been active labourers in the husbandman's service, in destroying myriads of grubs and other unseen vermin, and they are the only workmen adequate to the task. Let the farmer employ man-servants and maid-servants, and



boys and girls, in the work of destruction in which the rooks so willingly and efficiently engage, and he will find that they cannot accomplish it; and, though they could, that they would cost him ten times more than all the damage the rooks may at other times occasion. Besides, it is only at certain seasons that they do any mischief; and it would not cost much to employ boys to scare them away at those times; and the good which they do on so many occasions would make ample compensation for the hire of the scare-crow boys.

Professor M<sup>c</sup>Gillivray remarks, that rooks seem to calculate on the protection they usually receive in the neighbourhood of their breeding-places. It is highly interesting to observe them in such places, fellow-labourers with man when the plough is at work, closely following in his track to consume the destructive larvæ that are turned up. At such times, too, as if conscious of the good work in which they are engaged, they admit of a nearer approach.

Having attempted to prove that they are useful, let me farther endeavour to interest your feelings in their behalf, by showing that they are amiable, social, affectionate creatures. For this purpose I shall quote what follows from Goldsmith's *Natural History* :—

“ A large collection of rooks had subsisted many years in a grove on the banks of the river Irwell, near Manchester. ‘ One serene evening,’ says Dr Perceval, ‘ I placed myself within the view of it, and marked with attention the various labours, postures, and evolutions of this crowded society. The idle

members amused themselves with chasing each other through endless mazes, and in their flight they made the air resound with an infinitude of discordant voices. In the midst of these playful exertions, it unfortunately happened that one rook struck his bill against the wing of another. The sufferer instantly fell into the river. A general cry of distress ensued; the birds hovered, with every expression of anxiety, over their distressed companion. Animated by their sympathy, and perhaps by the language of counsel known to themselves, he sprung into the air, and, by one strong effort, reached the point of a rock which projected over the water. Their joy become loud and universal; but, alas! it soon changed into notes of lamentation; for the poor wounded bird, in attempting to fly towards his nest, dropped again into the river, and was drowned, amidst the moans of the whole fraternity." From an article in a popular periodical, evidently written by a kind-hearted naturalist, I shall select the following quotation:—"In spring 1827, I had occasion to witness a fact which interested me not a little. One of those beings who go about early in the morning with firearms, seeking what they may deprive of life, happened to mark two rooks on one of my trees feeding their young. The fatal tube was immediately levelled, and in an instant both birds lay gasping in the agonies of death at my feet. An idiot laugh, and a hurried retreat, on observing that I was a spectator of his morning's achievement, were all that I could make of him; but I observed the poor orphan progeny, all uncon-

scious of the calamity which had so suddenly reached them, stretching out their bare featherless necks, and raw open mouths, in expectation of the wanted supplies. My heart sunk within me at the sight, and I could not help moralizing on that cruel, unthinking disposition which marks so many of our race. For twelve long hours, whenever a returning rook intimated that food was in the act of being supplied to surrounding gullets, did these poor hungry nestlings solicit supply. At last I observed a bird seemingly more considerate than the rest, in the act of surveying the perishing family. With much difficulty was a small dole brought up from the throat-reservoir which was devoured with screams of delight. Another and another succeeded in this work of charity, till, I verily believe, the best fed progeny in my little rookery were those pauper dependants on common charity."

Since it must be acknowledged, then, even by their enemies, that rooks do much good—since, in foraging for the support of life, they are taking but a small portion of the crops which they have been instrumental in preserving from more destructive depredators—since they are amiable, affectionate creatures,—I would entreat their enemies to consider whether they are quite justifiable in taking away their life. What is it you take from these happy, active creatures? It is their all. You rob them of a precious gift which their benignant Creator gave, and which the most powerful of earthly potentates could not restore. We would shrink from unnecessarily crushing a fly, whose ephemeral term of life might, ere to-morrow's

sundown, come to a close. Still more reluctant surely should we be, without good cause, to cut short the existence of creatures, whose natural term, it is believed, surpasses the brief earthly pilgrimage of man. To the thoughtless, we would say, Can you take pleasure in cruelty? Will you scatter firebrands, arrows, and death, saying, Are we not in sport?

I am tempted to subjoin a brief sketch of one of this dusky brotherhood with whom I had the pleasure of being acquainted. I visited him at Ardrossan on the way to Cumbrae, and I was glad to find that, though a dozen winters had passed over his head, he had all the vivacity of early life. He was a crow of aristocratic extraction; at all events, he was of *high descent*, having been reared on one of the loftiest trees at Shieldhall, where his ancestors, it is believed, had had their favourite residence for many generations. When he was well fledged, he was brought down to the abodes of men, by one of the aspiring youths of Shieldhall, as a present to his aunt, Miss Oswald, and by her the pet crow, prized for its own good qualities, and loved for the donor's sake, was brought to her sweet villa at Ardrossan. Her villa was contiguous to that of Miss Hamilton of Holmhead, and our rook, having then the free use of his wings, and being of a social disposition, paid frequent visits to his neighbours, and soon formed acquaintance with the occupants of Miss Hamilton's poultry-yard, consisting of a cock and two hens. The intimacy increased, the visits became longer and longer, till at last the crow became domiciled along

with them ; and when Miss Oswald left Ardrossan, being unwilling to break asunder the ties of affectionate friendship, she left the crow in its adopted dwelling-place. The longer they were acquainted, the stronger did the friendship become, though it was evidently most ardent on the part of the crow. He was exceedingly attentive to his chosen friends the hens, and would often arrange their feathers and dress them to his own taste, though his services were sometimes rejected as officious and troublesome. The cock was a still greater favourite, and he roosted every night beside him, nestling under his wing.

After this Platonic friendship had subsisted for several years, one of the hens became sick and died. During her illness he was unremitting in his attention, waiting on her most affectionately ; but he could not ward off the stroke of death. A still greater calamity befel him, for the favourite cock also died. He was unceasing in his attention to him during his trouble, and when he died he was so disconsolate that he would not taste food for several days.

At last old age, which had carried off the others, crept on the remaining hen. When she became feeble and helpless, he scarcely ever left her for a moment, striving to cheer her by innumerable little acts of kindness. There were two steps up from the poultry-yard to the house in which they roosted ; and when she became too weak to mount the steps, as he could not himself lift her up, he always came to the kitchen window, and kept up an incessant clamour till some of the servants came out and lifted her up.

For two days before her death she could not leave the roosting-house, and he remained along with her, bringing her food, laying it down before her, and coaxing her to eat it. Notwithstanding his unwearyed assiduity and affectionate attention the poor hen died, and it was thought that he would not have long survived her. He was quite disconsolate. Life had lost its charm. He scarcely tasted food, and became altogether changed, so that from being lively and cheerful and active, he drooped and became timid and spiritless. Some young poultry were purchased, in the hope that they might cheer him; but he seemed quite afraid of them, and avoided their company.

After months had passed away, he gradually recovered his spirits, and became as brisk and lively a bird as you could look upon. He was no longer afraid of the inmates of the poultry-yard; but though he associated with them, they gained not his affections. He knew all the members of the household, and took with pleasure a bit of bread or cold meat from their hands. Unfortunately he was so much of an epicure as to be particularly fond of a new-laid egg; and when the exulting cackle of a hen proclaimed that she had deposited a treasure, there was generally a race betwixt the servant-maid and the rook, each being eager to seize the prize.

For a long time he was allowed to retain the free use of his wings, but complaints were lodged against him by the proprietors of the neighbouring villas, that he was in the habit of perching on the roofs of their

houses and of picking the lime from the *skews*, casting it up into the air. This frolic was an overt act of mischief in their eyes, but they did not take into account that it was conjoined with an act of utility, for it was only the loosened pieces of lime that he removed, and chiefly, we doubt not, that he might get at the vermin concealed underneath. As no person would become bound for his more sober demeanour, when he got into his altitudes, the poor fellow was condemned to have one of his wings clipped, that as a degraded biped he might for the future walk on the face of the earth. It was vexing to see him attempting to fly with the remaining wing, and falling down to the ground after being provokingly twirled round. The only way in which he could taste any of the departed joys of exalted station, was by mounting an old apple tree in the garden, the lowest branches of which were within his reach, and when he had reached the highest, he showed his delight by proud cawings and cacklings, for he had learned to imitate the notes of his gallinaceous associates.

He was a very cleanly bird, as his glossy plumage showed. When a pail of water was placed within his reach, he immediately entered it, and splashed it over and about him with great delight. He was still more delighted when there was a fall of snow, for he rolled himself in it, taking it up in his bill, and throwing it about with the greatest glee and merriment.

I was rather afraid that his egg-sucking propensity might bring him into trouble, and I was therefore much pleased to hear that he was cured of this.

Calling on Miss Hamilton of Holmhead (from whom I had got all my information) and inquiring for my black-coated friend, she told me that he was not only in good heart, but had become a reformed character. Some months before this, the maid-servant who had charge of him, hearing the cackle of a hen, ran to secure the egg thus announced, but blackie had been beforehand with her, and had it half-sucked before she arrived. Her ire was kindled, and pouring out a torrent of abuse on him, she put him in great bodily fear by chasing him with the besom in her hand round and round the back court. From that day to this, said Miss Hamilton, he has never tasted an egg, he has regarded them as tabooed; and when the other servants would not believe his keeper that he was reformed, she took them out and showed him sitting beside a hen's nest with three untouched eggs in it.

But, alas! alas! rooks as well as men must die, and in many cases sooner than expected. The rook is known to be long-lived, and the ladies who took an interest in him hoped that he might outlive them; but not observing him one morning going about as usual, they went to his roosting-place, and found only his feathers; the poor rook had been destroyed, and it was thought that rats had been the merciless midnight murderers. Alas! alas! poor bird, thou didst come to an untimely end, but thou didst not die unlamented; and thou hast not lived in vain, if unfeathered bipeds can derive from thee any instruction. He reads not the book of nature aright who finds not in it lessons of heavenly wisdom. He who spake as



never man spake, taught us to learn of the lilies of the field, and of the fowls of the air. If we need reproof and chastening, may we be docile as the rook, and with reverential love and fear listen to the warning voice which says, "Touch not, taste not, handle not." Let us also learn active benevolence from the rook. It had only instinct for its guide: how much more, then, might be expected of us, when we have not only the book of nature, but the Word of God to teach us wisdom; and when we have, moreover, the spotless example of Him who had mercy on the perishing; who, though rich, for our sakes became poor, that we through his poverty might be made rich! Let us then "be kind one to another, tender-hearted." "Let us put on us the elect of God, holy and beloved, bowels of mercy, kindness, long-suffering, forbearing one another, and forgiving one another, even as God for Christ's sake has forgiven us."

We landed on the Allans, and in the rock-pools got some good seaweeds, and some mollusca and starfishes, but nothing of great rarity. We afterwards spent some hours in dredging, but I think we got nothing that has not been mentioned in the former excursion. We dined, according to previous invitation, with worthy Mr Drummond at Kaimscloffe, and reached the pier about six o'clock, to be in readiness for the steamer from Glasgow to take us back to Ardrossan. We waited, however, for an hour, and no steamer appeared. A dense fog by this time had come on, and the beautiful frith and the romantic scenery which we had so much admired in the morn-

ing, were as much hid from us as if it had been midnight. At last we heard the sound of the paddles, though we could not see the steamer till she was close to the pier. All who had been waiting hurried aboard, and were considerably disappointed on learning that the captain had resolved to proceed no farther till the fog cleared away. Ten o'clock came, and it was as dense as ever, and then we had to make up our minds to pass the hours of darkness the best way we could aboard the steamer, the captain saying that he would, weather permitting, sail by the earliest peep of day. The cabin was full of passengers. A few of the ladies found beds in the ladies' cabin. The rest of the party, both ladies and gentlemen, had to be content to pass the night in a sitting posture, musing or dozing, for no very sound sleep, I think, was enjoyed. However, by midnight all were quiet. When it began to dawn, there was some stir on deck, and the welcome tidings reached us that, as the fog seemed nearly gone, we were about to start for Ardrossan. Accordingly we sailed, but in a very little it became as misty as it had been the preceding evening. On, however, we hied in the direction of Ardrossan. We saw no land, not even the cliffs or the old castle on the shore at Portincross. On, still, we went, though beginning to wonder that we had not reached Ardrossan. At last we passed a boat, and the captain having hailed the fishermen, saying, "Where are we?" the answer returned was, "Off Irvine bar," which was six or seven miles farther on than Ardrossan. Cautiously retracing our course

through the mist-covered waves, we passed so near to Saltecoats, that we could almost have shaken hands with those who were on the pier, though only a small portion of it could be seen by us; and as Ardrossan was only a mile farther on, we thought we could not fail to catch the harbour. We came to rocks, but so strange was the appearance of these rocks, that familiar as we were with all the coast, we could not tell whether they were rocks on the mainland, or some rocky islands that we had discovered. By groping about, however, we did at last get into the harbour, and right glad were we all to step once more ashore. Unhappy they who, in the journey of life, have no light from on high to guide them! O! how much to be pitied are they who, amidst doubts, and perplexities, and fears, go on in spite of constantly increasing gloom, till their feet stumble on the dark mountains, and the blackness of darkness encompasses them for ever!

The last excursion to Cumbrae in which I had any part, was made when the Ayrshire Naturalists' Club visited that island in August 1850. On August 21st, they met at Ardrossan from different parts of Ayrshire, and left it about ten o'clock for Millport in the Big Cumbrae, which they reached after an hour's pleasant sail. The minutes of the day's proceedings state, that 'a good deal of club business was transacted in the cabin of the steamer; several new members were elected, and two gentlemen who had come with a member—one of them a student from Cambridge—were, according to a by-law, admitted as members of the club for the day.'

On landing at Millport, they divided, as formerly, into two parties: one party, consisting of geologists and botanists, provided with hammers, clinometers, and vasculums, set out to circumambulate the island; and the other party set out in a boat to dredge in the deep. They all met again at the inn about four o'clock. The land division had been much gratified with their excursion; the marine party were not much satisfied with their success. When asked by the other party what they had got, the curt reply was, "Nothing." "Call you that nothing?" said one of them, lifting a live *Pecten maximus*, lying in the bottom of the boat, "Call you that nothing?" and beginning to measure it, it proved not undeserving of notice, as one of the largest specimens of this great bivalve, being 8 inches in length, and  $7\frac{1}{2}$  inches in breadth. It was borne off triumphantly by the landsmen, and the mollusc it contained, if well cooked, would be quite a treat for a supper party.

Though the dredgers got fewer shells than they expected, some of them were well deserving of a place in their cabinets. They found five large specimens of *Cardium Norvegicum*, and one good specimen of *Tellina crassa*, with several of the following,—*Tellina donacina*, *Cardium nodosum*, *Tapes Virginica*, *Venus fasciata*, *Thracia pubescens*, *Thracia phaseolina*, and a single valve of *Cochlodesma prætenuis*. They dredged also *Lucinopsis undata*, *Saxicava rugosa*, *Kellia suborbiculata*, and *Lima lians*—the *Lima* in its millepore nest, and the other two lodged in old shells. One good specimen of *Fusus Boothii*

was found, and, we think, a specimen of *Rissoa abyssicola*.

They fell in with some beautiful specimens of *Solaster papposa*, one large specimen of *Solaster endeca*, which is rare in the West; several specimens of *Uraster glacialis*, too large to be manageable, so that they were returned to the deep—one of the specimens was abnormal, having only four rays.

They were pretty successful in dredging algæ. Some beautiful specimens of *Bonnemaisonia asparagoides* would have been thought a rich prize, had it not been more than usually abundant this season on the coast of Ayrshire. They also got specimens of *Ceramium botryocarpum*, *Ceramium nodosum*, *Nitophyllum laceratum*, *Chrysimenia clavellosa*, and *Schizonema helminthosum*. Major Martin obtained a good specimen of *Stilophora rhizodes*, rare in Scotland, and his fellow-dredger found a *bittock* of *Gracilaria confervoides*, almost new to Scotland, as it had only once before been got about forty years ago by the Rev. Mr M'Vicar in the Firth of Tay. It is less rare in England. The only zoophyte of value that was dredged was *Antennularia ramosa*.

After giving a list of the rarer flowering plants got in Cumbræ, on this and on some previous occasions, I shall give the Geological Report in the words of the minute made out by the Rev. Mr Cowan of Troon:—*Anthemis nobilis*; *Anagallis tenella*; *Conium maculatum*; *Hyocyamus niger*; *Lithospermum maritimum*; *Pinguicula Lusitanica*; *Solanum Dulcamara*; *Trifolium fragiferum*; *Veronica anagallis*, &c.

*Geological Section Report.*

This beautiful and interesting island was visited by the Ayrshire Naturalists' Club on the 21st of August 1850. The marine, botanical, entomological, zoological sections started at once in pursuit of their respective objects. On landing at Millport, the geological section noticed the old red sandstone, which exists on the opposite Ayrshire shore at Portnacross,\* and also on the south side of Bute (?), dipping towards the S.W., at an angle of about 40°; a little to the west of the town the angle is even greater.

Proceeding across the island, and diverging towards the east to the first elevated ridge, the disturbing agent is seen in the hard porphyritic trap of which it consists. Further to the east another ridge, somewhat higher, consists of the same igneous formation. On examining the general run of the ridges, of which there were several in view, they were found to be as nearly as possible from N.E. to S.W. On an inferior ridge, on the north side of the rising ground, a vein of very highly crystallized quartz was found, the red approaching jasper, the dull resembling chalcedony. A minuter and prolonged examination would elicit some beautiful specimens of this rock.

\* There is in the sandstone at Portnacross, at the corner of a quarry, a few hundred yards from the village, near the road to Ardrossan, at a considerable height above the road, all the appearances of the action of waves, hollowing, scooping, and smoothing; at least we know not how otherwise to account for the present state of the rock, although, of course, it is far above the present sea-level, and several hundred yards distant from the present sea-line.

Advancing eastwards, but reverting towards the highest point, the junction of the porphyritic trap and sandstone was discovered, the sandstone being greatly indurated. And the next, and all the subsequent touches of the hammer, showed us the regular sandstone, till we stood on the *Gled-stone*, a large sandstone boulder, covered with partially engraved initials, from which the view up the Frith exceeds description.

When found in junction with the trap, and a little to the east, the sandstone dips at  $10^{\circ}$  from N.E. to S.W. In one place, near a farm-house and small loch, the angle was  $21^{\circ}$ ; within a few hundred yards only  $11^{\circ}$ , and generally, in all our subsequent observations, from  $10^{\circ}$  to  $12^{\circ}$ .

Having thus found the north-east section of the island to be composed of the old red sandstone, and the lower ridges to the west of porphyritic trap, we retraced our steps, descending in a slanting direction to the northern side of the island.

When fully half way down, the sandstone appeared highly conglomerated, and on the beach, all the way round the north side and south and south-west side, it continued so, till coming round towards the town, when pure sandstone reappeared, dipping at an angle of  $40^{\circ}$  at a distance of 300 or 400 yards from a ridge of the disturbing porphyritic trap.

Immediately on our reaching the northern shore, we found our path leading below a considerable cliff of sandstone conglomerate, which terminates nearly opposite the town, allowing the inhabitants to pass

with ease right across the island from the north to the south shore.\*

On the west side of the path alluded to, the sandstone, considerably hardened, appears in a fine section of some 30 or 40 feet, dipping at  $10^{\circ}$ , and running in the usual direction. For nearly a hundred yards it extends along the coast, but at that point it is suddenly interrupted by an outburst of porphyritic trap, of nearly 30 yards in width, and 50 or 60 feet in height. The appearance of the upbursting trap is beautiful—its countless lines, nearly perpendicular, contrasting greatly with the regularly dipping sandstone on either side.

Westward the sandstone is generally on a level with the beach, visibly supporting the overlying mass of porphyritic trap. In one place the sandstone appears as elevated as the disturber, but only for a few yards, when it sinks again to the usual level. Its base being covered, the elevating cause was concealed, but strange to say, its dip seemed as regular as its less elevated neighbours on either side.

Towards the end of the cliff, which extends about half-a-mile, the porphyritic trap becomes considerably

\* We saw an itinerant tinker at this spot making his way to his tent, near the village, laden with two good oars, which a sea-side visitor had told him of. We were told that a boat had been lost on the Arran coast a few days before, and it was thought these were the oars belonging to it.

When on the highest point, we accosted the shepherd, and had some pleasant talk. He was a man apparently of threescore and ten, and had been about half a century on the island. He carried under his arm a large-print fine old Bible.



higher, and strongly inclined to the columnar form, the underlying sandstone being visible to the end of it.\*

Several trap dikes exist in the north side of the island, of somewhat remarkable appearance. Two of these on the coast, distant about 400 or 500 yards, merit attention. The east one, running due N. and S., about six feet wide, and the west one, running E. and W., or  $1^{\circ}$  to the S.W. They seem to be the ends of a trap bow, the eastern half being very entire, having the usual shaft at the end thus:—



The western side wants that portion of the curve which lies between the coast line and the cliff. Another very remarkable dike, to the east of the town, will repay a visit. It is found, we were told, on the opposite coast of Ayrshire.

The western end of the ridge is chiefly conglomerate till fairly round the end of the island, and coming eastwards, when the porphyry again appears on the surface.

We ended our walk after five hours' interesting observation, satisfied that originally old red sandstone, alternating with sandstone conglomerate, had formed the basis of the spot on which we stood; that

\* Considerable disappointment was expressed by our zoological friends (which was shared by the other sections, for here we all met, except the *marines*) at the disappearance of some specimens of grouse, which the geologists had previously dissected, examined, and disposed of, although not exactly in their line.

after the formation of these with igneous agents, it had in the centre of the island burst through, and, covering much the larger halves of the middle and western portions of the island, thereby formed those ridges which run so regularly from N.E. to S.W.

In the eastern and higher sections, the trap has raised but not covered the sandstone.

And these general commotions have been increased by numerous dykes of trap, which run in various directions, the most remarkable of which, however, follow a direction nearly parallel with the dip of the sandstone and the slope of the porphyritic ridges, *i.e.*, from N.E. to S.W.

We hope that the club will devote another day in the coming summer to the Larger Cumbrae.\*

Dr Macculloch mentions that the geological structure of Great Cumbrae corresponds with that of the middle region of Bute; consisting of red sandstone, traversed by trap veins. It contains also beds of conglomerate attached to the sandstone. It might have been expected, from the structure of the adjoining island of Little Cumbrae, that overlying trap would have abounded; but only a small patch of it is to be found on the western shore, which, it is probable, is only the remains of a much more extensive portion, which, in process of time, has wasted away.

\* The marine section found many valuables; among others, a *Pecten maximus* (8 in. by  $7\frac{1}{2}$ ), which furnished the writer and his family and a friend with a novel and not to be despised supper, though zoologists, of course, would prefer grouse.

Trap veins, however, are very abundant. They are commonly erect, and stand high above the surface, like walls. "The most remarkable of these," says the Rev. Mr Drummond in the New Statistical Account of the island, "are on the east side of the island, running nearly parallel, from five to six hundred yards from each other. Their direction is from north-west, where they spring from the hill, to the south-east, where they disappear in the sea. The one to the north-east measures upwards of forty feet in height, nearly a hundred in length, and in mean thickness from ten to twelve feet. The one to the south-east is upwards of two hundred feet in length, from twelve to fifteen in thickness, and from seventy to eighty feet in height, where it joins the hill, but droops considerably towards the sea, and, when viewed in a certain direction, exhibits the distant resemblance of a lion couching—hence it is sometimes called the Lion. These dykes are composed of blue whin, with joints and seams like basalt, but not in columns."

Dr Macculloch, after mentioning the trap veins in Cumbræ, follows up the matter with valuable remarks of a general nature. "It requires no arguments to show that these veins have derived their forms from those of the fissures of the surrounding rocks, and that, however far they may now project from the present surface, they have at one time been surrounded by the strata, to the removal of which they owe their present appearance. They offer, therefore, a gauge by which to judge of the waste of the surrounding land," though an imperfect one, seeing that

it is evident that they have to some extent partaken of the waste. On the southern coast of Arran, for instance, many of these dykes run into the sea, forming little creeks and natural piers. The space betwixt them must at one time have been filled up with earth or softer rock, which the waves have washed away, having at the same time some wasting influence on the dykes themselves, though from their greater hardness more capable of withstanding the dashing of the waves and the grinding influence of the pebbles hurled against them and over them.

“The veins of the Great Cumbrae” says Macculloch, “present many different varieties of composition; but greenstone, basalt, and porphyritic traps, are among the most common. Two only appear sufficiently remarkable to claim a more distinct notice. One of these is conspicuous for its foliated structure. The other is traversed by numerous reticulating veins of calcareous spar—a circumstance which I have not elsewhere observed in the veins of trap, though not very uncommon in the overlying masses.”

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### THE LITTLE CUMBRAE.

This interesting little island I have occasionally visited, though by no means so frequently as the larger island. Though two miles in length by about a mile in breadth, there are only four families resident on it; the lighthouse-keepers, of course, being

one of these. It rises to greater height than the Great Cumbrae, the summit, on which are seen from all quarters the remains of the old lighthouse, being probably seven or eight hundred feet above the level of the sea. One would have thought that this was a better situation for the lighthouse than that chosen for the new one, which is low down on the shore; but it was found that the light on the top of the hill was more liable to be obscured by clouds and mists. Dr Macculloch says, "The whole island presents a ridgy and terraced surface, covered with verdure, the ridges being the faces of the beds of trap which are piled in succession from the base to the summit. The greater number of these abrupt faces look to the south-west, in which respect they differ from those of the Garroch-head in Bute, which are placed in the opposite direction; but it is to be supposed that in both cases the inclination of the trap beds is determined by that of the red sandstone, on which they both alike repose." The Little Cumbrae, though covered with trap, shows what is the foundation by a small portion of the sandstone which forms the little peninsula on which the old castle stands. The aspect of the trap rock is various, sometimes presenting a prismatic fracture, at other times approaching a rude columnar structure. Occasionally, also, it is porphyritic, and at other places amygdaloidal. Dr Macculloch makes some very interesting remarks on the peculiarities which the amygdaloids frequently present. They often contain brown spar, and sometimes needlestone and red stilbite. Mixed with the trap

there is in some places a rather rare substance, a kind of indurated steatite, in nodules as large as a pea. Their colour is green of different shades. These are found also on the larger island. There is besides a kind of green earth among the nodules appearing in a great diversity of aspects. Its most interesting appearance is that described by Macculloch as follows: "It often occurs in stalactite or arborescent forms, sometimes incrustated with a distinct deposit of chalcedony; subsequently embedded in a solid mass of the same material, or else simply surrounded with the general matter of the chalcedonic nodule in which it lies; its progress being always easily traced from the including rock. In these cases, the ramifications are often very minute and intricate; producing those well-known ornamental substances often supposed to contain vegetable remains, and popularly distinguished by the name of moss agates."

Donald Monro, Dean of the Isles, who wrote, as we have already remarked, in 1549, after mentioning the large island as "inhabit and manurit, with ane kirke, callit Sanct Colmis Kirke," adds, "besides this lyes ane iyle callit Cumbræ Dais, because there is many dayis intill it." An author who writes a description of this island, and quotes the preceding passage, subjoins: "Not a vestige of the deer here alluded to has survived within the memory of the present time, nor does any remembrance of them appear to have been handed down by local tradition." All the *dayis* that were so numerous in the time of Monro are still there; but *dayis* is not the Scotch for *does* or *deer*, as

he seems to think, but the antique name for those trap terraces which still exist, and from which it was “callit Cumbrae Dayis.”

This island, as we have said, though in the county of Bute, *quoad civilia*, has been attached to the parish of West Kilbride, in Ayrshire, *quoad sacra*, though separated from this parish by two miles of what is at times pretty rough sea. It is the property of the Earl of Eglinton, and has for many years belonged to that family. Though it has been long occupied as a rabbit warren, from which some 500 dozen are annually sent to market, an aged person told me that he remembered when there was not a rabbit in the island, and that the colony which now overruns it was introduced in his young days. Besides the rabbits, some sheep and a few young cattle find pasturage on it. And yet there must have been generations of rabbits in it in the olden time, and even *deer*, though they were not *dayis*; for we find both mentioned in the year 1515, in “a Lettre to Heu Erle of Eglintoun, makand him and his assignais keep-eris, oversearis, correkaris, and suplearis of the *Isle of Litill Comeray*, the deere (deer), cunyngis (conies or rabbits), and wild beastis being thairin, quhill the Kingis perfite age xv. yere; because Robert Huntare of Huntarestoun, forrestar of heritage of the said isle, is nocht of power to resist the personis that waistis the samyn, without suplie and help,” &c.\*

The old castle which we have already mentioned

\* See New Statistical Account of West Kilbride, from which I have received information.

is a square tower, the walls of which are pretty entire, and are six feet in thickness. It was habitable in Cromwell's time, and, when he paid a visit to Scotland, as Lord Eglinton was very unfriendly to the Protector, he seems to have withdrawn his family to this little fortress as a place of safety. Principal Baillie mentions this in one of his letters, saying, "I got to the Isle of Cumray with my Lady Montgomery, but left all my family and goods to Cromwell's courtesy, which, indeed, was great; for he took such a course with his soldiers, that they did less displeasure at Glasgow than if they had been in London, though Mr Zachary Boyd railed on them all to their face in the High Church." It is stated in the old statistical account, though I know not on what authority, that this castle in the Little Cumbræ was taken by Cromwell and burned. And it fared no better with the castle of Ardrossan, for he took it, and destroyed the greater part of it, causing the stones, it is said, to be carried by sea to Ayr, to be employed in building the fort there, the ruins of which still remain. This was not the first time that the castle at Ardrossan had fallen into the hands of the English. Pont, in his history of Cunninghame, mentions that, in the days of Wallace, it was held by an English garrison, but that Wallace was determined that they should not continue to hold it. Accordingly, he drew together some of his trusty friends, instructing them to keep themselves concealed till the evening. Having then assembled them, they set fire to some cottages at the base of the Castlehill: the



English garrison rushed out to extinguish the flames, upon which Wallace and his men rushing in took possession of the castle, and stationing themselves at the gates, slew the English soldiers as they returned, and threw their dead bodies into the dungeon-keep below, which from that time was called “Wallace’s Larder.”

We are unwilling to conclude what we have to say respecting this old castle in the Little Cumbrae without mentioning the tradition that both it and the corresponding one at Portincross, about three miles distant on the Ayrshire coast, were resting-places for funeral parties when they were conveying the bodies of kings and great men to their long resting-place in Iona. Be this as it may, they are picturesque objects in the beautiful scenery; Portincross being, moreover, interesting as belonging to Crawford of Auchenames, a name well known in the history of Scottish song; and still greater interest is attached to the place because to a certain extent associated with an event for which we have cause at this day to be grateful to a kind Providence—the destruction of the Spanish Armada, and the blasting of the Popish plans. In 1588, after the dispersion of this formidable fleet, when the elements fought for us, one of their large ships having been driven by stress of weather into the Frith of Clyde, perished close to Portincross Castle. Much property was recovered from the vessel by means of a diving-bell in 1740, and among other things, a good many brass and iron cannons, which were all taken away,

except one, which still remains near the old castle, and which I examine with interest every time I am there. The Spanish crown on it is now becoming very indistinct.

About thirty years ago, the late Earl of Eglinton caused some *tumuli* on the north side of the Little Cumbrae to be opened. They were found to contain sepulchral urns, fragments of weapons, &c., which were deposited in Eglinton Castle. The Norwegians had long the possession of these islands in the Frith of Clyde, and their last stand was made at Largs, on the opposite shore. These barrows, then, may contain the remains of some of their heroes; but envious time has obscured their glory, and hidden their names. “We all do fade as a leaf.” “As for man his days are as grass; as a flower of the field so he flourisheth: for the wind passeth over it and it is gone; and the place thereof shall know it no more.”

## APPENDIX.

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### DIRECTIONS FOR LAYING OUT SEaweeds, AND PREPARING THEM FOR THE HERBARIUM.

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MUCH of the pleasure, and much of the benefit, arising from the study of algology, consists in the pursuit. It is in so far like hunting and fishing; there is all the excitement of hope, and all the advantage of exercise; and there is this in its favour, that however great the success, there is no life taken, no blood shed, and the subsequent enjoyment is not limited to a short repast, but may be continued for many years.

Let the young algologist provide a tin vasculum, or an oil bag, in which he may deposit his morning stores; as some of the finer algæ soon fade in colour when exposed to the air, it may be well to have a small wide-mouthed flask, in which they may be carried floating in sea water. A staff with a crooked end is not a bad accompaniment. Thus accoutred, let him proceed to the shore at ebb-tide, and examine the *rejectamenta* cast out by the sea, turning them all over with his staff, that no newly buried beauty may be allowed to perish. Let him then carefully examine the algæ growing on the uncovered rocks,—extending the investigation to those rocks or stones that are still partly under the water. When the tide is turned, and begins to flow, finer weeds may often be got floating in little bays, or where currents betwixt rocks are formed. These may be easily caught by the weed-gatherer's staff.

When the vasculum is filled, let the spoils of the sea be carefully examined. There will be much uncertainty in many cases as to the contents of the vasculum, till the weeds are floated and spread out on paper. Then it is

that there is scope for fine taste, and for delicate manipulation : nature must be consulted as the sure instructress for laying out the specimens in the most graceful manner. Place on the table a basin of fresh water ; cleanse the weeds from any impurity ; let only a small portion of the mass be put into the basin at a time, as some begin to decompose when placed in fresh water, while others, it must be owned, improve in colour by being allowed to remain for a day or so in fresh water. If the specimens are of large size, they may, after cleansing, be floated in a shallow tin-tray ; but if they are only of a moderate size, a white soup plate will answer the purpose, the plate being nearly filled with lukewarm water. As much of the beauty of the specimen depends on the beauty of the paper, it should be fine, and at the same time stout—the kind called *medium* paper. It should be cut so as to be smooth at the edges, and this is best effected by the book-binder's knife.

Having got the paper cut into square and oblong portions of different sizes, take a piece suited to the size of the specimen, and place it under the weed floating in the water, then putting the left hand under the paper, on which the weed is placed, bring it near the surface, and gently move the seaweed till it assume on the paper a natural and graceful form. The fingers of the right hand may be employed in helping to arrange the branches of the plant. Some, instead of the fingers, use the point of a silver fruit knife ; others employ a pretty large camel hair brush. Dr Cocks of Plymouth, in aid of the fingers, employs a pair of pincers, with one end of which he removes superfluities, and with the other arranges the branches on the paper ; while Mr Boswarva of Plymouth uses in addition a perforated plate of zinc, on which he spreads out the most delicate algæ.

When the specimen is properly arranged, let the paper on which it is spread be very cautiously removed from the water, and allowed to lie for a few minutes, to allow the water to run off, and during this time other specimens may be laid out. When all that have been collected have been laid out, then the drying and pressing processes begin. Before any portion of the paper on which the specimens have been laid out is dry, place them on several folds of blotting paper, and cover them with a fold of

muslin, and over the muslin lay several folds of blotting paper, repeating this operation till all the specimens that have been laid down on the white paper are covered with a fold of muslin, and several folds of blotting paper—were the muslin not interposed, the specimen would adhere to the blotting paper, and would be destroyed. If a screw-press is at hand, let the whole be placed in it, and very gently pressed, as strong pressure at first would bruise the plants, especially if they be gelatinous. After a few hours of slight pressure, the whole may be removed from the press, and shifted into dry blotting paper. The advantage of being covered with a fold of muslin will then appear, for in general none of them will be found adhering to the muslin. The whole may then be replaced in the press, and stronger pressure applied to them, and under this they may be allowed to remain for a day or a night. In shifting them the second time, the muslin coverings may be removed, for, when permitted to remain till the plants are quite dry, there is danger of their leaving chequered impressions on the specimens. They may then be replaced in the press, and very strong pressure applied. They should be shifted once a-day for a week, giving them dry paper, and at the end of that time they may be deposited in the Herbarium, as in general they will be found adhering so closely to the paper as to have the appearance of beautiful paintings. Should any of them, from deficiency of gelatine, be found not adhering, the paper may be brushed over with skimmed milk, and the specimen returned to the press, and when dry it will be found that the milk acts as gum without leaving a glare.

Where there is not a press, all that is necessary is two boards the size of the blotting paper, and three weights of stone or cast iron. The blotting paper containing the specimens being placed betwixt the boards, one weight may be placed above them at first, two at the second shifting, and all the three afterwards, and let the last be a very heavy one. When the specimens are taken out of the blotting paper, before they are placed in the Herbarium, the scientific name, the locality, and the date, should be neatly written at the bottom.

Some of the larger seaweeds are, by algologists that we know, dipped for a little in hot water, which renders them more pliant, and prevents them, for a time at least, from

becoming black. Others are in the habit of giving them a coat of varnish, to help to preserve the natural colour, and of attaching them to the strong paper of the Herbarium with glue.

It is a common complaint that the *Porphyrae* do not adhere to paper in drying, but shrink, and become torn, in consequence of starting from the paper. This may be easily prevented. Let them be spread and covered with muslin in the common way, but let not the muslin be removed for some days, and let them have, along with the other species, a supply from time to time of blotting paper, not only dry but heated at the fire. In four or five days they will be quite dry, and will adhere so closely to the paper as to seem a part of it.

Very gelatinous kinds, such as *Gloiosiphonia*, *Mesogloia*, *Batrachospermum*, &c., as they are apt to adhere to the muslin, and to be bruised when in a soft state, by pressure, are allowed by many to lie exposed to the air till they are dry, and then put under strong pressure after the under side of the paper has been moistened. When allowed, however, thus to dry in the open air, they continue to have a shrivelled appearance. In most cases it is preferable, and will be found safe, to treat them in the same manner as the *Porphyras*—covering them immediately with muslin and blotting paper, allowing them to lie for a few hours with scarcely any pressure, then giving them dry paper without removing the muslin, gradually increasing the pressure every time dry paper is applied; and after three or four days the muslin may be removed, leaving the specimen in beauty, and ready in a day or two to be placed in the Herbarium.

Some delicate plants that speedily lose their colour in fresh water, are thought to preserve their colour better if floated in sea water; but this is not often practised.

There are several ways in which collections of seaweeds may be preserved after they have been carefully prepared. They may be kept loose betwixt folds of paper; and the sheets may be arranged alphabetically, according to the names of the plants they contain. This is found very convenient when reference is required, or when a selection from them is to be made.

When the student of algology has got specimens named on good authority, they should be kept separate, and may

be attached by fine pins to the sheets in which they are placed. This, in their case, is preferable to any permanent fastening, because it may often be necessary to examine their structure and fructification, by placing them under the microscope, or by holding them up betwixt the eye and the light, that they may be examined with the aid of a good lens.

When specimens are placed in an album, slits may be made to receive the four corners, and in this way they may be easily removed and replaced at will. If the collection is chiefly valued for its beauty—and few things are more beautiful than a good collection of well prepared algæ—a handsome album should be procured, formed of stout-coloured paper or thin pasteboard, and on the pages of this album the specimens should be tastefully arranged according to their size and form, and then they may be made to adhere to the strong coloured paper or board by touching the under side of each corner with well-made paste; or, if there is no wish to remove them,—by applying the paste with a camel-hair brush to the whole of the under side. After a short pressure they will adhere in the firmest manner; and there is no way in which a fine collection appears to so great advantage, especially if each specimen is surrounded by a printed edging or border.\*

We doubt not that those who engage in good earnest in the study of algology will thank us for the following instructions as to the mode of preparing the fructification, &c., as objects for the microscope :—

From the minuteness and delicacy of their structure, it will at once be perceived that the aid of a good microscope, or at least a powerful lens, is an indispensable requisite in prosecuting the study of algæ in its scientific details. The forceps, knives, and scissors, used in dissecting other vegetable tissues, will do equally well for them; and as most of them are not of so perishable a nature as forms of a high rank, any delay from other engagements in mounting them is not of material consequence.

When mounted on glass slides, or other modes, in which

\* When seaweeds are prepared for fancy work, the art consists, not in causing them to adhere to the paper, but in transferring them from the paper, and keeping them free. Mr Pike, of Brighton, is very successful in preparing in this way, for sale, fancy-work composed of seaweeds. His mode of preparation, however, is a secret.

they can be viewed by transmitted light, they form permanent objects, not only of scientific interest, but also, from the beauty of their form, of agreeable entertainment to even the uninitiated; and it is to several simple plans of preparing them for this purpose that we devote the few following paragraphs.

In the first place, we must mention the few implements and materials required in preparing the cells, and afterwards mounting the objects in them. These are—

Slips of crown or patent plate-glass, rough or smoothed at the edge. The size chiefly used is that approved by the Microscopical Society, viz.,  $3 \times 1$  in. In using a uniform size, great facility is given in the way of exchange.

Thin (or microscopic) glass, cut into circular or square pieces, of various sizes, as covers for the objects immersed in fluid.

Phials with a supply of either of the liquid preparations enumerated below.

Japan varnish, gold size, and thin pieces of gutta percha, or other materials used for forming the cell in which the object is to be preserved in a fluid state.

Knives, forceps, and scissors, of various constructions. Saucers with and without lips, watch-glasses, hair-pencils, chamois leather for cleaning glasses.

Having these ready, with the help of a hair-pencil, a square or circular space is marked off with varnish, exactly on the centre of a glass slide, forming a narrow band or cell  $\frac{1}{8}$ th in. or so in diameter. The varnish in this process should be laid on very thin, and a second coat should not be given till the first is quite dry. A third or fourth may be added, according to the depth required for the specimen. In making the gutta percha cell, we shall suppose a portion of that material cut out with a knife or punch of the same size and form as that mentioned for the one of varnish. With this ready, place a glass slide on the hob or other stand at fireplace, till it is of such heat as will barely allow of handling. A pair of forceps will hold it on one side, while with the other the gutta percha is dropped on the centre, and pressed gently down with



some flat substance. When quite cold, the cell may be farther cemented to the glass by several layers of varnish applied to the exterior edge.

We will now suppose the collector to have returned from the shore, laden with the spoils of a recent storm, in the shape of some finely fruiting specimens of the various species—*delesseria*, *polysiphonia*, *callithamnious*, or allied genera. After supplying himself with a sufficiency for drying, he will have as many fragmentary portions left as will make a number of preparations.

He is now ready to try his hand at mounting these, and we proceed to give, briefly, a few simple directions, referring such as would be proficient in the art, for further details, to Quekett's admirable work on the microscope, and also to articles on the subject in the *Annals and Magazine of Natural History* for February and April 1845.

The first mode we mention is one to which we have not yet referred, inasmuch as no barrier cell requires to be raised for confining the fluid. Some of the *callithamnious* and allied genera, whose delicate branchlets are thin as the "web of the gossamer loom," require no cell with raised walls. All that is necessary is to touch one of the thin glass covers—previously carefully cleaned—all round with varnish. The delicate object having been laid on the surface of a glass slide, with the necessary quantity of preserving fluid, the glass cover is carefully dropped over it. As the varnish repels the water, none but superfluous liquid escapes from beneath, which can be removed with small pieces of blotting paper. After standing for a little, the varnish gets firmed, and the object may be sealed up, as mentioned in the next mode.

In using the varnish cell, having ascertained that the walls are quite dry, their surface even, and the enclosed space free from dust, we may proceed to prepare an object. A thin glass cover having been selected, a slight degree smaller than the exterior edge of the cell, the operator proceeds to give a slight layer of varnish to the cell to be used for cementing the cover. The preserving fluid, with an object suitably proportioned in size and thickness, is laid out on the centre, and the glass cover thereafter carefully laid on. It is better to have rather too much than too little liquid, as what remains can be sucked up with blotting paper; and the operator must not be disappointed

if he fails frequently in excluding the air. In a short while it is ready to seal up, by giving, over the edges of the thin glass, a thin coating of varnish. After standing on a dead level for twenty-four hours, a second and third coat should be given; and if the colour of the Japan varnish is not liked, a coat of sealing-wax varnish will make a nice finish.

The gutta percha cells are used much in the same way; the surface of the cell getting a slight coating of varnish before putting in the specimen, though, if the cell is quite flat, this part may be dispensed with. Space will not permit to speak of the paper covers, modes of attaching names to objects, and packing the slides in cases or boxes, which all require attention. All we would say about preserving them is, to see that they are thoroughly dry, and kept without touching each other, in order to secure their safety. Larger specimens of the fruit or fronds of the Fuci, and other melanospermeæ, should be preserved in phials.

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#### LIQUID PREPARATIONS FOR PRESERVING ALGÆ.

*Mr Thwaites's Creosote Preparation.*—1 part alcohol, 14 parts water, to be accurately saturated with creosote. This should be filtered through prepared chalk, and the solution allowed to stand some time before use.

*Goodby's Solution for Marine Algæ.*—4 oz. bay salt, 2 oz. alum, 4 grains corrosive sublimate, 2 qts. boiling water. Some use simple spring water, or sea water, which answers well enough for many.

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### LIST OF RARE PHENOGVENOUS PLANTS FOUND IN ARRAN.

REVISED AND ENLARGED BY PROFESSOR BALFOUR.

<i>Alchemilla alpina</i> ,	.	.	Goatfell, &c.
——— <i>conjuncta</i> ,	.	.	Glen Sannox.
<i>Althæa officinalis</i> ,	.	.	Struey rocks.
<i>Anagallis tenella</i> ,	.	.	Common.
<i>Agrimonia Eupatorium</i> ,	.	.	In several places.
<i>Allium ursinum</i> ,	.	.	Do.

<i>Alisma ranunculoides</i> ,	. In several places.
<i>Anthyllis vulneraria</i> ,	. Do.
<i>Arctostaphylos uva-ursi</i> ,	. Holy Isle.
<i>Apium graveolens</i> ,	. Near Lochranza.
<i>Avena planiculmis</i> ,	. Goatfell.
<i>Atriplex laciniata</i> ,	. Lag.
<i>Bidens cernua</i>	. Near Brodick.
—— <i>tripartita</i>	. Near Lamlash.
<i>Brassica Monensis</i> ,	. Near Brodick, &c.
<i>Carex pauciflora</i> ,	. In several places.
—— <i>lævigata</i> ,	. Near Corriegills.
<i>Carlina vulgaris</i> ,	. Struey rocks.
<i>Cakile maritima</i> ,	. Southend, &c.
<i>Convolvulus soldanella</i> ,	. Black-water-foot.
—— <i>sepium</i> ,	. In several places.
<i>Cotyledon umbilicus</i> ,	. Lamlash, &c.
<i>Crambe maritima</i> ,	. Imacher Port.
<i>Cuscuta epilinum</i> ,	. Lamlash, among flax.
<i>Corydalis claviculata</i> ,	. On roofs of houses, Corrie, &c.
<i>Drosera rotundifolia</i> ,	. Common.
—— <i>Anglica</i> ,	. Near Lamlash, Corrie, &c.
—— <i>longifolia</i> ,	. Near Lochranza, Goatfell, &c.
<i>Epipactis ensifolia</i> ,	. Whiting bay, Sliderry, &c.
<i>Eleocharis uniglumis</i> ,	. Kildonan.
<i>Eupatorium cannabinum</i> ,	. In many places.
<i>Habenaria albida</i> ,	. Lochranza, &c.
—— <i>bifolia</i> ,	.
—— <i>chlorantha</i> ,	.
—— <i>viridis</i> ,	. Macherie.
<i>Fedia dentata</i> ,	. Lochranza.
<i>Galeopsis versicolor</i> ,	. Corn fields.
<i>Gnaphalium dioicum</i> ,	. King's-cross Point, &c.
<i>Gymnadenia conopsea</i> ,	. Near King's Cove.
<i>Helianthemum vulgare</i> ,	. Kildonan, &c.
<i>Helosciadium repens</i> ,	. Lamlash.
<i>Hieracium vulgatum</i> ,	. Lochranza.
<i>Hypericum elodes</i> ,	. Lochranza and King's Cove.
—— <i>androsæmum</i> ,	. In many places.
—— <i>dubium</i> ,	. Whiting bay.
<i>Inula Helenium</i> ,	. Struey rocks.
—— <i>maritima</i> ,	. Lamlash.
<i>Lathyrus sylvestris</i> ,	. Struey rocks.
<i>Lamium intermedium</i> ,	. Kildonan.

<i>Ligusticum Scoticum</i> ,	.	Southend, &c.
<i>Lithospermum maritimum</i> ,		Brodick, &c.
—— <i>officinale</i> ,	.	Lochranza.
<i>Lobelia Dortmanna</i> ,	.	Do.
<i>Listera ovata</i> ,	.	Near Lamlash.
—— <i>cordata</i> ,	.	Do.
<i>Mentha sylvestris</i> , var. <i>ve-</i>		
<i>lutina</i> ,	.	Brodick.
<i>Myrica gale</i> ,	.	Common.
<i>Narthecium ossifragum</i> ,	.	Common.
<i>Oenanthe Lachenalii</i> ,	.	Corriegills.
<i>Oxyria reniformis</i> ,	.	Goatfell.
<i>Pinguicula Lusitanica</i> ,	.	In many places.
<i>Pencedanum Ostruthium</i> ,		Brodick.
<i>Pulicaria dysenterica</i> ,	.	Struey rocks.
<i>Polygonum Raii</i> ,	.	Lamlash and Lag.
<i>Pyrus fennica</i> ,	.	Near Lochranza.
<i>Potamogeton plantagineus</i> ,		Brodick, in a ditch.
—— <i>oblongus</i> ,	.	Loch Davie.
<i>Ranunculus lingua</i> ,	.	Near Lamlash.
<i>Raphanus maritimus</i> ,	.	Southend.
<i>Radiola millegrana</i> ,	.	Near Springbank.
<i>Rhodiola rosea</i> ,	.	Near Lochranza.
<i>Rosa involuta</i> ,	.	Lamlash.
—— <i>villosa</i> ,	.	
<i>Rubus coryifolius</i> ,	.	Lamlash.
—— <i>cordifolius</i> ,	.	Do.
—— <i>incurvatus</i> ,	.	Do.
—— <i>nemorosus</i> ,	.	Near Lag.
—— <i>discolor</i> ,	.	Do.
—— <i>macrophyllus</i> ,	.	Lamlash.
—— <i>Koechleri</i> B., <i>pallidus</i> .		
—— <i>saxatilis</i> ,	.	Lamlash.
—— <i>Idæus</i> ,	.	Do.
—— <i>affinis</i> ,	.	Do.
—— <i>carpinifolius</i> ,	.	Do.
—— <i>leucostachys</i> ,	.	Do.
—— <i>plicatus</i> ,	.	Do.
—— <i>sylvaticus</i> ,	.	Do.
—— <i>mucronatus</i> of		
<i>Bloxam</i> ,	.	Do.
—— <i>nitidus</i> ,	.	Do.
<i>Salix herbacea</i> ,	.	Ben Varen.

<i>Samolus Valerandi</i> , . . .	Brodict, Lamlash, Kildonan.
<i>Saxifraga stellaris</i> , . . .	Goatfell, &c.
<i>Sedum Telephium</i> , . . .	
<i>Smyrnum olusatrum</i> , . . .	
<i>Solanum dulcamara</i> , . . .	In many places.
<i>Thalictrum alpinum</i> , . . .	Ben Varen, Goatfell.
—— minus, . . .	Whiting bay.
<i>Triticum laxum</i> , . . .	Lamlash.
<i>Typha latifolia</i> , . . .	Whiting bay.
<i>Utricularia vulgaris</i> , . . .	Loch Davie.

## A FEW ADDITIONAL CRYPTOGAMIC PLANTS.

<i>Lastrea foeniseii</i> , . . .	Abundant, Brodict.
<i>Equisetum Telmateia</i> , . . .	Benan-head.
<i>Batrachospermum vagum</i> , . . .	Goatfell.

This last plant—the most beautiful species perhaps of the beautiful family—I am glad to say has lately been found in abundance, in streamlets, on Goatfell, by my valued friend, Mr Keddie. It had not before been met with in Scotland, except by Captain Carmichael in Appin, and by Professor Dickie in Loch Phadrick, Aberdeenshire, 2199 feet above the level of the sea. It has been found by Sir W. Hooker on the summit of Snowdon.

## LIST OF MOLLUSCA

Found by Mr BEAN, of Scarborough, in Shelly Sand, dredged in Lamlash Bay by Major MARTIN and Dr LANDSBOROUGH.

<i>Aelis unica</i> .	<i>Anomia undulata</i> .
—— nitidissima.	—— squamula.
<i>Aemæa testudinalis</i> .	—— aculeata.
—— virginea.	—— cylindrica.
<i>Adeorbis subcarinatus</i> .	<i>Astarte Scotica</i> .
<i>Amphisphyra hyalina</i> .	—— Danmoniensis.
<i>Artemis exoleta</i> .	—— elliptica.
—— lineta.	—— compressa.
<i>Arca lactea</i> .	<i>Buccinum undatum</i> .
<i>Aporrhais pes-pelican</i> .	<i>Balanus communis</i> .

*Balanus* *Scoticus*.  
 ——— *balanoides*.  
*Chiton* *marmoreus*.  
 ——— *asellus*.  
 ——— *ruber*.  
*Crania* *spiralis*.  
 ——— *personata*.  
 ——— *Flemingii*.  
*Chemnitzia* *rufescens*.  
 ——— *indistincta*.  
*Cerithium* *reticulatum*.  
 ——— *adversum*.  
*Cœcum* *trachea*.  
 ——— *imporforatum*.  
 ——— *glabrum*.  
*Clitia* *striata*.  
*Cerithiopsis* *tubercularis*.  
*Circe* *minima*.  
*Crenella* *discors*.  
 ——— *marmorata*.  
 ——— *decussata*.  
*Cardium* *echinatum*.  
 ——— *edule*.  
 ——— *fasciatum*.  
 ——— *nodosum*.  
 ——— *Norvegicum*.  
 ——— *Suecicum*.  
*Cyliclina* *cylindracea*.  
 ——— *truncata*.  
 ——— *obtusa*.  
 ——— *mamillata*.  
 ——— *umbilicata*.  
*Corbula* *nucleus*.  
*Cyprina* *vulgaris*.  
*Donax* *anatinus*.  
*Dentalium* *entalis*.  
*Emarginula* *reticulata*.  
*Eulima* *polita*.  
 ——— *distorta*.  
 ——— *bilineata*.  
*Fissurella* *reticulata*.  
*Fusus* *antiquus*.  
 ——— *Islandicus*.

*Kellia* *rubra*.  
 ——— *suborbicularis*.  
*Lamellaria* *perspicua*.  
*Lacuna* *pallidula*.  
 ——— *vineta*.  
 ——— *canalis*.  
*Littorina* *neritoides*.  
 ——— *littorea*.  
 ——— *rudis*.  
 ——— *littoralis*.  
 ——— *neglecta*.  
*Leda* *caudata*.  
*Lepton* *convexum*.  
*Lima* *hians*.  
 ——— *Loscombii*.  
 ——— *subauriculata*.  
*Lutraria* *elliptica*.  
*Lucina* *radula*.  
 ——— *flexuosa*.  
 ——— *spinifera*.  
*Lucinopsis* *undata*.  
*Mangelia* *turricola*.  
 ——— *rufa*.  
 ——— *septangularis*.  
 ——— *Leufroyi*.  
 ——— *linearis*.  
 ——— *nebula*.  
 ——— *costata*.  
*Mactra* *solida*.  
 ——— *cinerea*.  
 ——— *truncata*.  
 ——— *elliptica*.  
 ——— *subtruncata*.  
 ——— *stultorum*.  
*Montacuta* *bidentata*.  
 ——— *substriata*.  
*Mya* *truncata*.  
*Mya* *var. Uddevalensis*.  
 ——— *arenaria*.  
*Mytilus* *edulis*.  
*Modiola* *modiolus*.  
 ——— *phaseolina*.  
*Nassa* *reticulata*.

- Nassa incrassata.*  
*Natica monilifera.*  
 ——— *Alderi.*  
 ——— *Montagui.*  
*Nucula nucleus.*  
 ——— *nitida.*  
 ——— *radiata.*  
*Ovula acuminata.*  
*Ostrea edulis.*  
 ——— *parasitica.*  
*Odostomia conoidea.*  
 ——— *plicata.*  
 ——— *unidentata.*  
 ——— *rissoides.*  
 ——— *cylindrica.*  
 ——— *interstincta.*  
 ——— *ornata.*  
 ——— *spiralis.*  
 ——— *decussata.*  
 ——— *excavata.*  
*Pecten opercularis.*  
 ——— *tigrinus.*  
 ——— *maximus.*  
 ——— *pusio.*  
 ——— *striatus.*  
 ——— *similis.*  
 ——— *varius.*  
*Pectunculus glycymeris.*  
*Psammobia Ferroensis.*  
*Patella vulgata.*  
 ——— *athletica.*  
 ——— *pellucida.*  
*Pectinaria Belgica.*  
*Pilidium fulvum.*  
*Pullastra vulgaris.*  
 ——— *virginea.*  
 ——— *aurea.*  
*Puncturella Noachina.*  
*Purpura lapillus.*  
*Pileopsis Hungaricus.*  
*Philine operta.*  
 ——— *scabra.*  
*Philine catena.*
- Rissoa alba.*  
 ——— *calathus.*  
 ——— *crenulata.*  
 ——— *costata.*  
 ——— *costulata.*  
 ——— *cingillus.*  
 ——— *Beanii.*  
 ——— *inconspicua.*  
 ——— *fulgida.*  
 ——— *minutissima.*  
 ——— *rubra.*  
 ——— *interrupta.*  
 ——— *labiosa.*  
 ——— *punctura.*  
 ——— *rufilabrum.*  
 ——— *semistriata.*  
 ——— *striatula.*  
 ——— *vitrea.*  
 ——— *ulvæ.*  
 ——— *Zetlandica.*  
 ——— *striata.*  
 ——— *parva.*  
*Skenea planorbis.*  
 ——— *nitidissima.*  
 ——— *rota.*  
 ——— *divisa.*  
*Scalaria communis.*  
*Scaphander lignarius.*  
*Saxicava arctica.*  
 ——— *rugosa.*  
*Sphenca Binghami.*  
*Syndosmya Boysii.*  
 ——— *prismatica.*  
*Spirorbis conica.*  
 ——— *nautiloides.*  
 ——— *lucida.*  
 ——— *corrugata.*  
 ——— *heterostrophus.*  
*Serpula Mulleri.*  
 ——— *vermicularis.*  
*Terebella chrysodon.*  
*Terebratula caput-serpentis.*  
*Teredo megotara.*

Thracia phaseolina.	Vermiculum subrotundum.
Tellina crassa.	—— funetum.
—— donacina.	—— concentricum.
—— fabula.	—— politum.
—— tenuis.	—— retortum.
—— solidula.	Arethusa lactea.
Trophon clathratus.	—— vesicula.
—— Barvacensis.	Renoidea oblonga.
Turritilla terebra.	Textularia oblonga.
Trochus cinerarius.	Bulimina nitida.
—— magus.	Lobatula vulgaris.
—— umbilicatus.	—— reversa var.
—— undulatus.	Rotalia Beccaria.
—— pusillus.	—— reversa var.
—— millegranus.	Nummulina marginata.
—— Montagui.	Spirolina subarcuatula.
—— tumidus.	Polystomella calcar.
—— ziziphinus.	—— crispâ.
Turtonia minuta.	—— depressula.
Trichopteris borealis.	—— umbilicatula.
Venus cassina.	—— auricula.
—— gallina.	Lagenula striata.
—— fasciata.	—— lincata.
—— ovata.	—— lævis.
FORAMENIFERA.	—— semistriata.
Vermilia triquetra.	Entosolenia squamosa.
—— scabra.	—— globosa.
—— serrulata.	—— marginata.
Vermiculum incurvatum.	Nodosaria linearis.
—— bicornæ.	—— legumen.
—— oblongum.	—— radícula.
—— intortum.	—— delecta.

THE END.





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